

MARINE REVIEW.

VOL. XIII.

CLEVELAND, O., JUNE 18, 1896.

No. 25.

Ship Yard Matters.

The Cleveland steamer Marquette, which has been undergoing general alterations of machinery at the Dry Dock Engine Works, Detroit, was delivered to her owners Saturday, having been out of commission just three weeks from the time of her arrival at the Detroit shops. In this time a new Howden hot draft boiler, 12 feet 3 inches diameter and 11 feet 6 inches long, allowed 150 pounds steam pressure, had been fitted to the boat, and her engines were compounded so that they are now 21 and 44 inches diameter by 36 inches stroke. Similar alterations were recently made by the same company in the Bradley steamer R. P. Ranney. The Ranney's old boiler was replaced by a Howden hot draft boiler of 12 feet 6 inches diameter and 12 feet length, allowed 160 pounds steam pressure. She also received a new high pressure cylinder of 20 inches diameter, which replaced one of 28 inches, and the compound cylinder was bushed from 52 inches diameter to 46 inches. A new crank pin and a lining up of journal brasses were also among the changes. A new wheel is now being made for the Ranney, as the old one was found too small for the new order of things. It is claimed that the reduction in fuel consumption on the Ranney has already exceeded expectations on account of the changes. Another repair job at the Detroit works is the rebuilding of the Argonaut's wrecked engines. The framing of these engines broke off under the cylinders, letting them fall back over the engine room hatch, bending the piston rod valve stems and breaking the valve stem brackets and small gear. This job will be completed in about two weeks. Engines of the steel lumber carrier building for C. R. Jones and others of Cleveland will have steam on during the present week, and it is expected that the big steamer Senator will be launched on Saturday next. Preparations were partly made to launch this boat last Saturday but it was found impossible to do so. Engines and boilers for the first of the Rockefeller steamers will be completed about July 1.

A Detroit correspondent says: "Owing to several wet days of late, completion of the large steamship Senator at Wyandotte has been further delayed, but with a very large force of men—some of them working almost day and night during the past week—the big ship is about ready for launching and will go into the water on Saturday, the 20th. Nearly 800 men are now employed in the Wyandotte ship yard, and with so much labor ready to be transferred to the Rockefeller ships, it is expected that the launch of the first of these will occur in about three weeks. The steamer Argonaut, which is undergoing repairs to machinery is also in the Detroit Dry Dock Co's large dock for part new keel, forefoot, and general bottom repairs. The new boiler built at the same company's boiler shop for the steamer Iron Age is completed and will be placed on board to-day (Thursday). The two boilers for the Senator are also at the sheer legs, ready for the arrival of the steamer from Wyandotte. Two steam steering machines, which are also at the dry dock company's sheer legs, are attracting considerable attention. The type is known as the "Sentinel." They were made in Glasgow, Scotland, by Alley & McLellan. The machine is compact and the workmanship excellent. Capt. Alex Ruelle's tug C. A. Lorman, which was ashore in Pigeon bay recently, and which was released by the Murphy Wrecking Co., was placed in the Springwells dry dock. She required new stanchions, new rail and considerable other work, her port side having been badly used up. Her boiler is shifted and her machinery and piping also suffered some damage. At Oades' marine railway the yacht Uarda, owned by C. D. Waterman, is up for minor repairs, repainting, etc. The S. M. Fischer, with the two new car ferry barges, all of which were built by Craig of Toledo for the Lake Michigan Car Ferry Co., passed up the other day. The tug is a fine appearing boat, but the barges, with their scow sterns, are not so good looking."

About \$3,000 will be spent on the schooner Moonlight and about \$6,000 on the Kent, both of which are under repairs at the dock of the Cleveland Dry Dock Co. The Moonlight was in need of no immediate repairs, but it was necessary to give both vessels a general overhauling, as they had been abandoned as total losses by the underwriters and could not get a class without repairs. They will both be good vessels when they leave the dry dock and can be used to advantage by J. C. Gilchrist, their new owner, although it might be impossible to make any money with them if they were not in a fleet like that controlled by Mr. Gilchrist.

Saturday, June 27, is the date fixed for the launch, at the yard of F. W. Wheeler & Co., West Bay City, of the steel steamer Lagonda, another big coarse freight carrier, which will be owned by Capt. John Mitchell and others of Cleveland. There are now five steel vessels of the

very largest class on the stocks at Wheeler & Co.'s yard—the Lagonda, the steel car ferry for the Flint & Pere Marquette Ry. Co. and a steamer and two barges for the Rockefeller fleet.

Davis & Sons, Kingston, Ont., are building a wooden steam yacht for A. E. Knopf of No. 36 Spruce street, New York. The vessel is to be 70 feet over all, 60 feet load water line, 12 feet 3 inches beam, 5 feet 9 inches depth of hold and 3 feet 10 inches draft. The engines are fore-and-aft compound, with cylinders of 7 and 14 inches diameter by 10 inches stroke. The boiler will be of a water tube kind originated by the builders.

Tonnage of the steamer Lagonda, building at West Bay City, as fixed by the bureau of navigation, treasury department, is 3,647.40 gross and 3,017.34 net. Tonnage of the tug S. M. Fischer, just completed by the Craig Ship Building Co. for the Lake Michigan Car Ferry Co., is 628.71 gross and 427.52 net, while that of the two new car ferry barges that are to tow with the Fischer is in each case 1,581.05 gross and the same net.

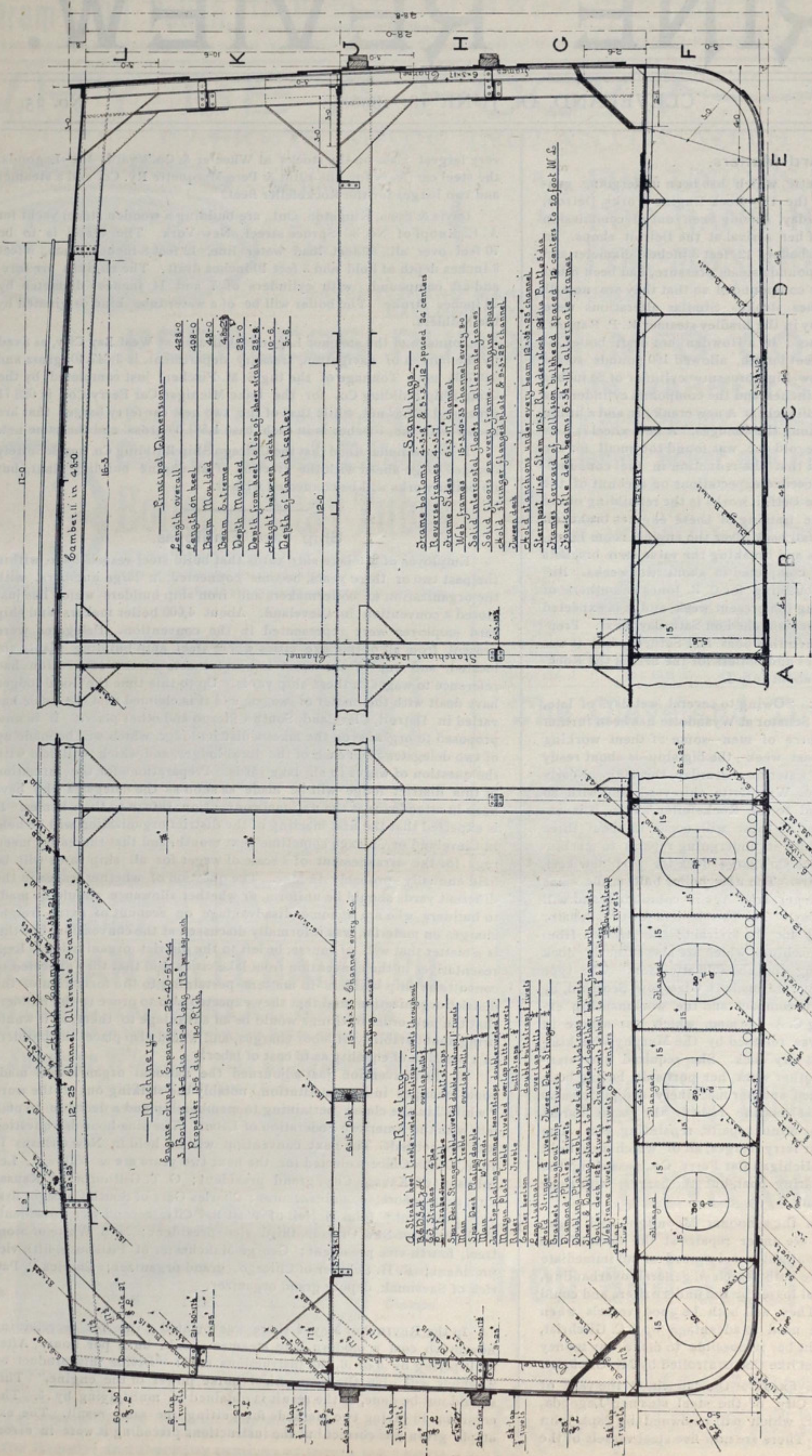
It is now understood that the Chicago Ship Building Co. has definitely decided to go ahead with the erection of an engine building plant, but no boiler works will be connected with it.

Ship Yard Employes.

Employes of the lake ship yards that build steel vessels have, within the past two or three years, become connected, in large numbers, with the organization of boilermakers and iron ship builders which has just closed a convention in Cleveland. About 4,000 boiler makers and ship yard employes were represented in the convention. Delegates were present from all of the lake cities where steel ship building plants are located, and one of the most important acts of the convention had reference to wages in these ship yards. Up to this time the local lodges have dealt with the matter of wages, and it is claimed that the scale has varied in Detroit, Cleveland, South Chicago and other places. It is now proposed to organize on the lakes a district lodge, which will be made up of two delegates from each of the local lodges, and which will deal with the question of wages in all lake yards. Preparations for the formation of this district lodge will be made as soon as the delegates who have been in attendance at the national convention return to their homes. It is expected that the first meeting of the district organization will be held in Cleveland or Chicago sometime next month, and that thereafter meetings for the arrangement of a scale of wages for all ship yards will be held annually, probably in May. The question of whether wages in the different yards should be uniform, or whether allowance should be made to builders who are at some disadvantage on account of extra freight charges on material, was informally discussed at the convention, but this is a matter that will, of course, be left to the district organization. Representatives in the convention from lake cities said that they expected to consult the ship builders in matters pertaining to the formation of the district organization, and that they expected also to prove to the builders that the new order of things would be an advantage to them, as it would bring about stability of labor charges, and would also place the builders in a position of equality as to cost of labor.

At the convention just adjourned the national organization made some changes in its constitution, notably the striking out of the word "white" in the clause pertaining to membership and a decision to affiliate with the American Federation of Labor. The nine-hour-day question was not settled. The next convention will be held in New Orleans in June, 1898. Officers elected for the next two years are as follows: Lee Johnson of Kansas City, grand president; G. T. Gilthorpe of Kansas City, grand secretary and treasurer; Charles Garr of South Chicago, first vice president; John McNeil of West Bay City, second vice president; W. J. Smith of New Orleans, third vice president; N. B. White of Montreal, fourth vice president; George Manchester of Pittsburg, fifth vice president; F. H. Schiller of Chicago, grand organizer; Charles P. Patrick of Savannah, deputy grand organizer.

In the REVIEW of May 4, there was printed a rule for ascertaining how much coal a modern lake steamer should burn per hour. After multiplying by .5 or .6, the instructions read: "Divide this product by 2, which will give the economical horse power of the engine." This should not be done, as the result is obtained by multiplying by .5. The error was in giving two methods for getting the same result. The example given was correct but the instructions preceding it were in error.



MIDSHIP SECTION OF ROCKEFELLER STEAMER BUILDING AT SHIP YARD OF F. W. WHEELER & CO., WEST BAY CITY, MICH.

Description of Three Rockefeller Ships.

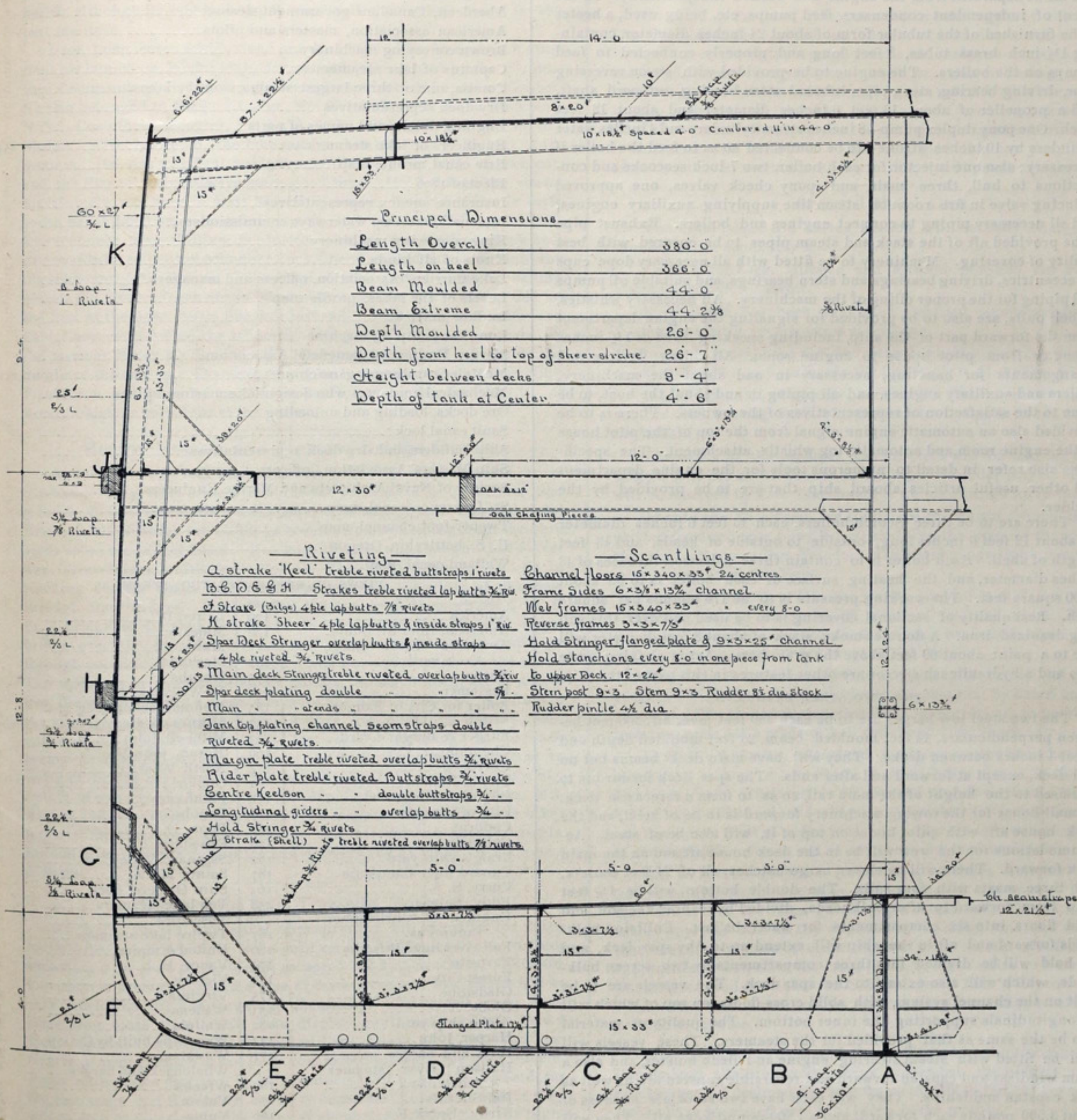
Five of the fleet of twelve new Rockefeller ships have been described in recent issues of the REVIEW. Illustrations made from drawings of midship sections of three more of these vessels—the steamer and two barges under construction at the yard of F. W. Wheeler & Co., West Bay City, Mich.—are presented herewith. The barges are duplicates, so that one drawing serves for both. Dimensions of the steamer are as follows: Length, over all, 428 feet; length, between perpendiculars, 408 feet; beam, moulded, 48 feet; depth, moulded, 28 feet; depth, top of keel to sheer strake, 28 feet 8 inches; depth, between decks, 10 feet 6 inches; depth of water ballast tank at center, 5 feet 6 inches.

the forward and after ends; also a forecandle deck forward, and one steel deck-house forward, as well as a steel pilot house. She will have, also, a steel deck-house on the spar deck aft, with galley and dining rooms on the main deck aft. Accommodations for such of the crew as are not housed in the after spar deck house will be provided in the forecandle. Engines and boilers are to be placed aft, between decks, the boilers fore-and-aft, with fire room forward of them. The boiler house is to be of steel, and the coal bunker, located between decks, next forward of the boilers, is also to be of steel, carried up to the height of the boiler and deck-house aft. The double bottom, which is to be 5½ feet deep from collision to engine bulkheads, will be divided by center keelsons and solid floors into eight compartments, for water ballast, and will be built on the cellular system, solid longitudinals extending from the bottom plating to the tank top, continuous fore and aft. The vessel's hold will be divided into four compartments by three screen bulkheads, extending to the spar deck. The

spar deck is to be of steel complete, without wood covering, except inside the houses and on the forecastle deck forward, where a light pine covering will be used. The ship will have two masts without gaffs or sails, and there will be twelve cargo hatches, all forward of the coal bunker and all spaced 24 feet centers.

Provisions as to quality of material are practically the same as those applying to other steamers of the fleet. All plating is to be of open-hearth, mild steel, tested to the following specifications: Tensile strength not less than 54,000 nor more than 62,000 pounds per square inch. Limit of phosphorus not to exceed .08; elongation to be not less than 24 per

Details as to sizes, thickness and weights of plates, frames, stanchions, angles, stringers, butt straps, rivets, forgings, etc., are all provided for in specifications, and these are matters that will be carefully looked after by representatives of the owners in the construction of all of the vessels of the fleet. In the case of these three vessels the representative of the owners is Mr. John Haug of Philadelphia. Equal care is given in the specifications as to anchors, windlasses, capstans, steam steerer, electric light plant, deck hoist, side lights, canvas, rigging, ballast, bilge and fire pumps, and every other detail entering into equipment and outfit. There are to be two stockless anchors forward of about 3,500 pounds each,



MIDSHIP SECTION OF TWO ROCKEFELLER BARGES, BUILDING AT SHIP YARD OF F. W. WHEELER & CO., WEST BAY CITY, MICH.

cent. in eight inches and reduction not less than 45 per cent. Reports of tests to be furnished with invoices, and plates not to be run over or under theoretical weight more than 2 1/2 per cent. All shapes that are furnace-shaped also of open hearth steel. All other shapes of Bessemer steel or open hearth steel as desired by the builder. Rivets of the best open hearth steel, the limit of phosphorus to be .06, limit of sulphur .06 and tensile strength not less than 52,000 nor more than 60,000 pounds per square inch. Materials to be tested at makers' works to these requirements by a disinterested party to represent both steel maker and ship builder, and to be appointed by the ship builder.

and one kedge anchor of about 1,200 pounds, to be carried aft. In addition to the regular steam windlass and capstan forward, with reversible steam capstan aft, there are to be two deck capstans on the spar deck between the forward and after houses, all to be furnished by the American Ship Windlass Co.

The main engines are to be of the vertical triple expansion type, having cylinders 25, 40 and 67 inches diameter with a common stroke of 44 inches. Cylinders are to be lagged with sheet steel. The main valve will be of the piston type for the high and low pressure cylinders, with double ported slide valve for the low pressure cylinder, all to be worked

by double bar Stephenson link motion with adjustable cutoff. The bed plate is to be of cast iron in one piece, of box section, and the main journal boxes of cast iron, fitted with anti-friction metal. Provisions regarding the machinery otherwise are as follows: Three back columns of box section, all fastened to bed plate and supporting cylinders. The piston heads to be of cast iron, with cast iron rings and followers. The crank shaft to consist of forged wrought iron slabs, with wrought iron shaft, and crank pins of best machinery steel. Air pump and condenser, one bilge pump, one cold water pump, one feed pump for each boiler, to be connected to and operated by the main engine; or, if desired, these can all be separated from the engine and worked independently. In the event of independent condensers, feed pumps, etc. being used, a heater to be furnished of the tubular form of about 24 inches diameter, containing 1½-inch brass tubes, 8 feet long and properly connected to feed pumps on the boilers. The engine to be provided with steam reversing gear, driving bearing, stern pipe, inboard stern bearing, outboard shaft, and a propeller of about 13 feet 6 inches diameter and about 18 feet pitch. One pony duplex pump—8 inches steam cylinders and 4 inches water cylinders by 10 inches stroke—to be connected so as to feed the boiler if necessary; also one injector for each boiler, two 7-inch seacocks and connections to hull, three main and pony check valves, one approved reducing valve in fire room on steam line supplying auxiliary engines, and all necessary piping to connect engines and boilers. Exhaust pipe to be provided aft of the stack and steam pipes to be covered with best quality of covering. Machinery to be fitted with all necessary dope cups for eccentrics, driving bearings and stern bearings, and suitable oil pumps and piping for the proper oiling of the machinery. All necessary whistles, or bell pulls, are also to be provided for signaling the engine department from the forward part of the ship, including speaking tube of 1½ inches diameter from pilot house to engine room. All oiling devices and arrangements for handling, necessary in and about the machinery, boilers and auxiliary engines, and all piping in and about the boat, to be done to the satisfaction of representatives of the owners. There is to be provided also an automatic engine signal from the top of the pilot house to the engine room and automatic fog whistle attachment. The specifications also refer in detail to numerous tools for the engine department and other useful articles aboard ship that are to be provided by the builder.

There are to be three Scotch boilers, each 13 feet 6 inches diameter by about 12 feet 6 inches long, outside to outside of heads, and 13 feet length of shell. Each boiler is to contain three Adamson furnaces of 43 inches diameter, and the heating surface of each boiler is to be about 2,400 square feet. The working pressure is to be 175 pounds per square inch. Best quality of sectional covering is to be used and over this will be galvanized iron. A double smoke stack of about 8 feet diameter will rise to a point about 60 feet above the grate bars. Aetna shaking grate bars and a hydraulic ejector are other features in this part of the ship.

THE TWO STEEL BARGES.

The two steel tow barges are to be each 380 feet over all, 366 feet between perpendiculars, 44 feet moulded beam, 26 feet moulded depth and 9 feet 4 inches between decks. They will have main deck beams but no laid deck, except at forward and after ends. The spar deck forward is to be raised to the height of the main rail, so as to form a fore-castle deck. A small house for the towing machinery forward is to be of steel, and the deck house aft, with pilot house on top of it, will also be of steel. Accommodations for the crew will be in the deck house aft and on the main deck forward. There will be eleven cargo hatches, all of 24 feet centers, and three masts with four sails. The double bottom will be 4½ feet deep from forward to after bulkheads, divided by center keelson and solid floors into six compartments for water ballast. Collision bulkheads forward and aft in the ship will extend up to the spar deck, and the hold will be divided into three compartments by two screen bulkheads, which will also extend to the spar deck. The vessels are to be built on the channel system, with solid cross-floors, on top of which will be longitudinals supporting the inner bottom. The quality of material is to be the same as that provided for the steamers. These vessels will each be fitted with steam steering engine and deck hoister, and also a steam windlass and capstan forward and reversible capstan aft, as well as deck capstan amidships. They will each have two stockless anchors of about 3,500 pounds each forward, and a 1,200-pound kege aft. They will also have pumps for water bottom and fire pumps. The towing machine forward, furnished by the American Ship Windlass Co., will be suited to handling a wire rope hawser of 1¾ inches, and a donkey boiler on the main deck aft, allowed 120 pounds steam pressure, will be of sufficient capacity to run the capstan, ballast pumps and electric light engine at the same time. The electric plant will be of sufficient capacity to light the hold and deck when handling cargo, and to light also the apartments for windlass, boiler, steering engines and pumps, but there are to be no electric lights furnished for cabins.

Fourth of July Excursion Rates are offered between any two stations within 200 miles on the Nickel Plate road. Ask agents. 132 July 3

Blue Book of American Shipping.

In our last issue there was printed a table of contents of the Blue Book of American Shipping, which has just been published by the MARINE REVIEW, and which is to be revised and improved annually as a standard work devoted to shipping in this country. The publication of this book was based upon a large subscription, but provision was made for additional sales and it is offered at \$5 in heavy leather binding. There are more than 170 full-page engravings, 8 by 5½ inches, as shown by the following list:

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The Blue Book of American Shipping contains lists of American and Canadian lake vessels, with dimensions, and names and addresses of managing owners; statistics of lake commerce; statements showing the number and tonnage of ships owned and ships built in the United States for a number of years past; particulars of dock equipment at Lake Erie ports; reports concerning the operation of lake freight steamers; marine engineering and navigation information; directories of all prominent marine engineering societies and societies of naval architects in the United States; names and addresses of concerns owning fleets of vessels on coasts and lakes; directory of purchasing agents of 500 lake, river and coast passenger steamers; illustrations of 100 lake and ocean steamers.

Capt. Rowland H. Long.

Chicago vesselmen were shocked to hear Sunday morning of the sudden death of Captain Rowland H. Long, master of the steamer City of Rome. Their surprise was all the greater from the fact that Capt. Long had brought his steamer into port early Saturday afternoon and taken her to her dock. After leaving her in charge of the mate when the work of unloading had begun, Capt. Long went to his home, No. 204 Seventy-fourth street, Windsor Park, Chicago, and was sitting in a chair, conversing with members of his family, when suddenly he dropped to the floor. He died almost instantly. Five minutes before he appeared in perfect health, although he said he had not been feeling as well as usual for the past few days.

Capt. Long leaves a widow and one daughter. The funeral took place from his late home, Wednesday, the services being held by the St. Bernard Commandery, No. 35, Knight Templars, of which he was a member. He also belonged to Niagara Lodge, No. 375, A. F. & A. M., of Lockport, N. Y.; Corinthian Chapter, No. 69, R. A. M., Chicago, and the Mystic Shrine. With his death, the lake marine has lost one of its best shipmasters. He was a skillful navigator, and rarely met with an accident, and the City of Rome always made good time. He followed the sea all his life. He was born in East Blue Hill, Maine, June 20, 1840. In early youth he shipped on salt water vessels, but came to Chicago in 1866. The schooner Mary Collins, yet in commission, was his first command. Afterwards he sailed the schooner Zack Chandler, and then went into the big schooner J. W. Doane. Vesselmen of that period when the sailing vessels did the business of the lakes will remember the Doane as one of the best of the lake fleet. She was lost on Buffalo piers, and afterward Capt. Long commanded the schooner George. He shipped as mate on the steamer Wiley M. Egan in 1887, and took command of her in the middle of the season. The next spring he brought out the steamer John Plankinton and remained in her two years, leaving her for the City of Rome, which he sailed for seven seasons.

Beamy Vessels and Narrow Bridge Draws.

An increase to 50 feet beam will very probably mark the next movement towards greater dimensions in lake vessels. The Bessemer, Siemens, L. C. Waldo, Coralia, Stephenson, Maricopa, Queen City and John Ericsson, all of which are either in service now or coming from the ship yards soon, are 48 feet beam. Not long since it was thought that 45 feet was inconvenient width for a vessel. The chief difficulty will be in reaching certain docks and elevators, owing to the width of channels through draw bridges. For instance, the openings through the C. M. & St. P. bridge at Chicago are 47 and 48.5 feet, and the Division street bridge over the canal is 48.4 and 50.7. The new steamers could go through one side of either of these draws but would stick on the other. The openings in the Taylor street bridge, South Branch, are 51 and 40 feet, the wider proving a close shave for the new steamers. At Buffalo the Michigan street, city ship-canal bridge has openings 47 and 54 feet, only one side being available for 48-foot vessels. Openings in the Sixth avenue bridge, Milwaukee, are only 46 feet. This information as to width of bridge openings is from the Blue Book of American Shipping. Details of openings in bridges at Chicago, Duluth, Toledo, Buffalo, Milwaukee and Cleveland are given in two pages. There are many other features in this book that make it valuable for use aboard vessels. Special arrangements as to price and delivery can be made by managers of fleets.

Battleships and Torpedo Boats.

As finally passed, the naval appropriation bill provides for three battleships, one of which is to be built on the Pacific coast at a cost not exceeding 4 per cent. of the lowest accepted bid for the others. With the exception of armament and the type of turrets the new battleships will be very much like the Kearsarge and Kentucky. The vessels are to be of something more than 11,000 tons displacement each, and will have a speed of about 15 knots. Their cost will not exceed \$3,750,000 each, exclusive of armor, which is not to be contracted for until the next session. From intimations dropped by ship builders and from bids received for the Kearsarge and Kentucky, the navy department officials believe they will be able to contract for the ships at about \$3,250,000 each at the highest. Under the law, not more than two of the battleships can be built in one yard and one is to be built on the Pacific coast. The department officials believe there will be three bidders—the Cramps, the Newport News company and the Union Iron Works. Plans for the vessels are already well along towards completion. A circular advertisement to the ship builders of the country is also being prepared, setting forth the requirements of the torpedo boat destroyers of 30 knots speed, authorized by the law, and asking for bids. The offer of the Herreshoffs for the construction of these vessels is on file at the department and the general impression is that this firm will obtain the contract. The law also authorizes the construction of not more than ten torpedo boats to cost in the aggregate \$500,000. It has been decided to build six of these little

craft, three of 105 feet each in length and the others of 138 feet each in length. Their armament will cost in the neighborhood of \$10,000 each. In displacement they will be about the size of the Cushing, and their speed will be 20 knots each. Secretary Herbert is confident that he can contract for six of these little vessels within the amount of the appropriation and if possible he will try to get a seventh for the money. Under the law, three of these ships are to be built on the Pacific coast, one on the Mississippi river and one on the gulf coast. The remainder will be built in the east.

Pleased with the Blue Book.

Mr. H. F. J. Porter of Chicago, western sales agent of the Bethlehem Iron Co., writes the REVIEW as follows: "I am in receipt of your Blue Book of American Shipping and I write to thank you for your courtesy in sending it to me. Let me congratulate you also on having completed a book which can not but help being of great value to all who are interested in ship building on the lakes. It is a great credit to yourselves, and I trust that it will fully repay you for your trouble and the hard work which it must have cost to issue it. I am very glad that our people put their advertisement in the book as I know that it will prove of value to them."

Around the Lakes.

The Plum island life saving station will be fully equipped and in running order about July 1.

Letters for Geo. Hilborn and Edward McNabb are held at the Marine post office, Detroit.

R. F. Bogle has been appointed assistant superintendent of the Anchor line, with headquarters at Chicago.

Lorey A. Rand, who for five years past has been first mate of the steamer City of Rome, succeeds the late Capt. R. H. Long.

J. L. Higgin, Jr., of Chicago, receiver for the Vessel Owners' Towing Co., has sold the tug A. G. Van Schaick to Lydon & Drew, contractors, for \$4,500.

The wreck of the steamer Jim Sheriffs will be sold by the underwriters as it lies at Milwaukee to the highest bidder July 1. Sealed bids will be received by C. A. Macdonald & Co. of Chicago up to that date.

About June 20, a fixed red light will be shown from a lantern suspended from red spar buoy No. 30, marking the extreme inner end of the channel in Maumee Bay, Toledo. Manhattan range light (front) is south-west $\frac{3}{4}$ west from this light.

During the month of May the marine post office at Detroit handled to and from passing vessels 18,702 pieces of mail, of which 16,323 were letters. During this one month the service was nearly equal to one half of the entire business of five months last season.

Complaint is again being made of poor bells on tow barges. Some of them are said to have cheap steel bells that can be heard only a short distance. The United States steamboat inspectors are in nearly all cases insisting upon bells made of bell metal and of good sounding quality.

L. P. & J. A. Smith, Cleveland dredging contractors, have just finished quite a large job on the N. Y. P. & O. R'y docks in the old river bed, Cleveland. They put in 850 feet of new dock from Willow street bridge up the channel, widening the river about 60 feet at one point and increasing the draft of water to 20 feet. The job involved an expenditure of about \$30,000. It was not to have been finished until July.

Mr. W. A. Livingstone of Detroit is at all times well posted on matters pertaining to the operation of lake vessels. He says: "Few vesselmen know that the rules governing navigation in the St. Clair Flats canal, apply as well to the approaches on either end, and on this side that means a distance of some three miles. Vessels are limited in the approaches as well as in the canal itself, to eight miles an hour, as a maximum speed, and are liable for disobedience. This is important, as most vessels only slow down just on approaching the canal, where the rules provide otherwise."

Monthly blast furnace statistics, published by the Iron Age, show that the pig iron situation is improving somewhat, the weekly rate of production having declined in May from 189,398 to 182,220 tons, while the stocks have increased only 16,411 tons in the month.

A seagoing steam barge 150 feet long will be built by the Jackson & Sharp Co., Wilmington, Del., for the Commonwealth Transportation Co. of Philadelphia. The machinery, a compound engine, will be built by the Neafie & Levy Co. of Philadelphia.

Democratic Convention Notes—Tickets are on sale July 3d, 4th, 5th and 6th via the Nickel Plate road at rates lower than on other lines. Returning until July 12th. 130 July 3

Uniformed colored porters attend to the wants and comfort of first and second-class day coach passengers on the through trains of the Nickel Plate road. Rates lower than via other lines. 135 July 3



DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 409 Perry-Payne building, Cleveland, O by John M. Mulrooney and F. M. Barton.

SUBSCRIPTION—\$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, 75 cents. Advertising rates on application.

Entered at Cleveland Post Office as Second-class Mail Matter.

The books of the United States treasury department on June 30, 1895, contained the names of 3,342 vessels, of 1,241,459.14 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1895, was 360 and their aggregate gross tonnage 643,260.40; the number of vessels of this class owned in all other parts of the country on the same date was 309 and their tonnage 652,598.72, so that half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1895, was as follows:

Class.	Number.	Gross Tonnage.
Steam vessels.....	1,755	857,735.13
Sailing vessels.....	1,100	300,642.10
Unrigged.....	487	83,081.91
Total.....	3,342	1,241,459.14

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

Year ending June 30,	Number.	Gross Tonnage.
1891.....	204	111,856.45
" " " 1892.....	169	45,968.98
" " " 1893.....	175	99,271.24
" " " 1894.....	106	41,984.61
" " " 1895.....	93	36,352.70
Total.....	747	335,433.98

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

(From Official Reports of Canal Officers.)

	St. Mary's Falls Canal.			Suez Canal.		
	1895.*	1894.	1893.	1895.	1894.	1893.
No. vessel pass'ges	17,956	14,491	12,008	3,434	3,352	3,341
T'n'ge, net registd	16,806,781	13,110,366	9,849,754	8,448,383	8,039,175	7,659,068
Days of Navigat'n	231	234	219	365	365	365

* 1895 figures include traffic of Canadian canal at Sault Ste. Marie, which was about 1/2 per cent. of the whole, but largely in American vessels.

IN LOOKING over the list of aids to navigation for which appropriations have been made in the congress just adjourned, it is found that the vessel interests of the lakes have again been turned down by the light-house board. For a long time past the vessel owners of the lakes have tried to keep on pleasant terms with the light-house board, notwithstanding the treatment they have received. The REVIEW has hesitated about referring to the inefficiency of this branch of the government service on the lakes, as it was thought that anything said in these columns might be taken as coming from officials of the Lake Carriers' Association, but the wholesale manner in which all efforts of lake vessel owners in the last congress have been openly opposed by the board must be plain to everybody concerned. In letters to the senate committee on commerce the board declined to approve of an appropriation for gas buoys for the lakes, although it is admitted on all hands that these buoys would be highly valuable in the new channels of the Detroit, St. Clair and St. Mary's rivers, where the vessel interests have been compelled to maintain private lights. There is certainly a power in this board that is working against the lakes, and it would seem about time that the whole subject of light-house appropriations for the lakes should be taken up with the secretary of the treasury. Numerous recommendations of this board are known to have been made without special knowledge of the facts, and they fail to make provision for even the most important channels on which the government has spent millions of dollars. Note, for instance, the light for Middle island, for which Senator McMillan introduced an amendment to the last sundry civil bill. The board declined to recommend this light, saying there was a light on each side of Middle island about ten miles distant, and that while a light on the island would be a convenience, it was not at all necessary. They apparently pay no attention to the long list of strandings on the island, or to the fact that vessels run behind the island as a natural harbor of refuge and need a light there for that purpose. These facts have been presented to them repeatedly, and years ago they recommended the very light which they now disapprove. This board has been known to disapprove lights on the lakes without knowing where they were to be located, and without

taking the trouble to look up such matters. Several years ago they declined to recommend a light on Ballard's reef, and it subsequently turned out that no one of the board knew where Ballard's reef was at the time this action was taken. It would seem that there is nothing to be gained from further efforts to conciliate Admiral Walker and those of his associates who see fit to accord this sort of treatment to lake interests, and a straight out-and-out struggle over their heads with the secretary of the treasury would at least result in no great loss. Then, too, a change in administration that may place an Ohio man in the White House is near at hand, and this work on the part of the vessel owners ought to shape itself before the opening of the next congress.

If it is possible to do so, officials of the Lake Carriers' Association will take some means, either through government officials or the courts, to overcome the utter disregard shown for private lights and buoys, again this season, by careless vessel masters, and especially by captains of tugs towing big rafts. The tug Vigilant of Buffalo, towing a raft of logs belonging to Loud & Sons of Au Sable, Mich., passed down through the Detroit river on May 31 and carried away three small floats used as light-ships at Ballard's reef and one spar buoy from the west channel line in the same locality. This same tug in passing down the river with another raft on the 10th inst. again swept over all the buoys and carried away all the floats and lost them. Capt. Andrew Hackett, keeper of these lights and buoys, had been informed that the Vigilant was coming down the river and sent his son to meet her and endeavor to prevent a repetition of the trouble, but he was ordered off the tug and insulted by the man in charge of her. The raft was one of the largest that has been seen on the river for years. It took up the whole river. The steamer Topeka, which was bound up the river at the time, had to put back to Lake Erie. The float on which J. J. Lynn of Port Huron maintains a light on the Canadian side of the middle ground was recently carried away three times within ten days. The expense and annoyance to which light-keepers are subjected on account of this carelessness has become so great that officers of the Lake Carriers' Association are to take a hand in the matter and see what can be done.

THE FACT that the new American line steamer St. Paul has made the voyage between Southampton and New York in 6 days, 5 hours and 32 minutes, beating all previous records between these ports, does not mean that she is the fastest passenger ship on the Atlantic. The Cunarders Campania and Lucania—whatever may be said of the great power and great expense of fuel required in their operation—have crossed the Atlantic at a rate of speed per hour that is a full knot in excess of the St. Paul's speed. The average hourly speed of the St. Paul on the entire voyage was 20.82 knots. The Lucania has attained an average hourly speed on the Liverpool voyage of 22.01 knots and the Campania has made 21.82 knots for the full voyage. The St. Paul's tonnage is 11,629, her horse power 22,000 and her coal consumption about 310 tons per day. The Lucania and Campania are each 12,952 tons, with 30,000 horse power and burn about 540 tons of coal per day.

WHILE IN a reflective mood, a few days ago, one of the oldest of lake vessel owners remarked that he would await developments in the lake business for a year or two before putting any more money into ships. "It looks very much," he added, "as though Rockefeller and a few of the big ore corporations will regulate lake freights with their big fleets, and Carnegie, with his Conneaut railway, will soon be in a position to regulate rail charges from Lake Erie ports to the furnaces. They want stability in the business, and with their immense interests, they not only have advantages over the smaller class of owners, but they will be satisfied with profits that would prove a small item on a few vessels. By reducing rail freights from Lake Erie to Pittsburg and other furnace districts, Carnegie will overcome a large part of the advantages claimed for steel plants like that of the Johnson Company at Lorain. He never had any faith in the Lake Erie—Ohio river ship-canal scheme. His ownership of the Conneaut railway places the canal scheme at rest as far as he is concerned."

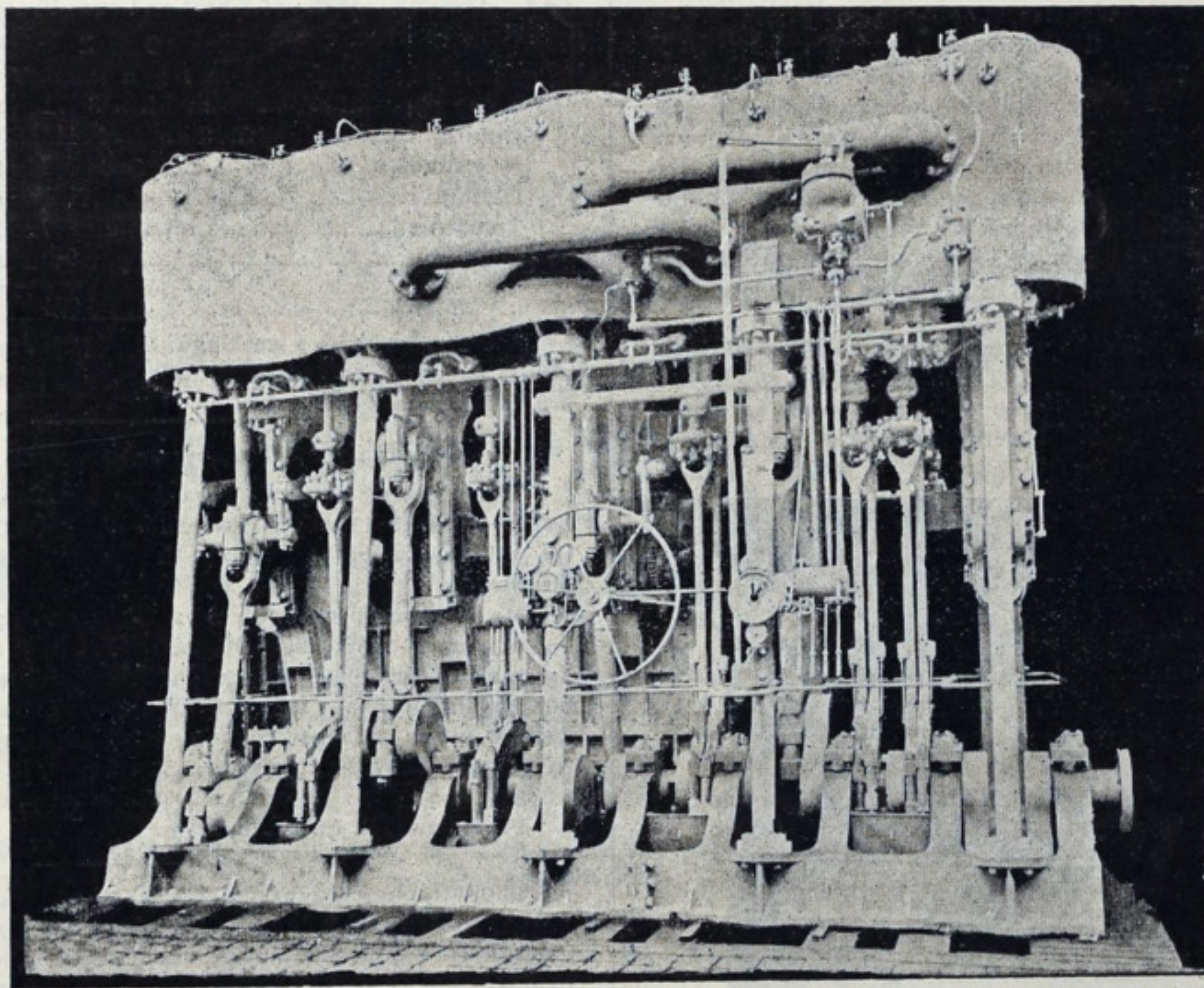
A CONSIDERABLE amount of what is called luck seems to attend most cases in which money is made in large sums these days. It is understood that Breyman Bros., dredging contractors of Toledo, made about \$100,000 on the Grosse point dredging work, which was included in the 20-foot channel project. When the Toledo contractors agreed to do this work their bid was looked upon as a hazardous one, and it was known that they were themselves fearful of the outcome, although they had been over the ground and had used every means within their power to determine the character of material to be dredged. Fortunately the job proved far easier than their greatest hopes, and it has made them rich.

It is to be sincerely hoped that the report that the Japanese government is to send two officers to the United States for the purpose of inspecting the ship yards of this country, with a probable view of ordering vessels here for that government, is true.

High Power Boilers and Five-Crank Engines.

In a recent issue the REVIEW referred to the freight steamer *Inchmona*, which has engines arranged on five cranks, and which was recently built by Messrs. Wm. Gray & Co. of West Hartlepool, Eng. We are now enabled to present an engraving of these engines and some facts regarding trials of the steamer, in which an unusual amount of interest has been exhibited. The *Inchmona* is owned by Hamilton, Fraser & Co. of Liverpool and is an ordinary cargo carrier of very full model, being 335 feet in length, by 46 feet 6 inches beam, and carries 5,000 tons dead-weight on 20 feet 6 inches draught. The new departure in the engine room consists generally in the adoption of a number of details tending towards the economy of fuel, with a view to arriving at once at a substantial reduction in coal consumption. The boilers, although of the ordinary multitubular type, are suited to a working pressure as high as 225 pounds per square inch, having been tested by Lloyds to 510 pounds per square inch. Then the five-crank engines, built by the Central Engine Works, West Hartlepool, are the first of their kind ever fitted to a ship, and they are regarded as highly advantageous in themselves and as specially applicable in the case of large powers for the use of high pressure steam. But these are not the only marked changes involved in the scheme of getting down to the ideal consumption of one pound of

such relatively light reciprocating parts, and such rapid reversals of the up-and-down initial stresses, as to enable the engines to run almost noiselessly and entirely to obviate vibration of the ship, even when light. All the valves are on the center line of the ship, and are driven by ordinary link motion, the work on the valve gear being unusually light, owing to the smallness of the valves, and the power passing through each crank being only one-fifth of the total instead of one-third, as in the three-crank engine. The smallness of the low pressure cylinders enables the centers of the engines to be closer than usual, and the engines altogether go into an engine room only one frame space longer than is usual with the three-crank engine. The trials were continued over two days, during which time the boilers and all steam joints remained absolutely steamtight and the engines ran in the most satisfactory manner possible. No bearing of any kind showed the slightest sign of warming, and although the engines were run for many hours at eighty revolutions per minute no difficulty of any kind arose, and at the conclusion of the trials the vessel proceeded on her voyage. The coal used during the trials was carefully weighed for four separate runs in the presence of four separate groups of visitors, who were taken off to the vessel by tug, the results being of a character to entirely justify the predictions of the builders. On the first run the consumption was 1.142



FIVE-CRANK ENGINES OF STEAMER INCHMONA.

coal per horse power per hour. The Engineers' Gazette of London says of other features of the machinery:

"With these engines and boilers, the builders felt confidence in holding out to the owners the expectation that the coal consumption would not be over 1.15 pounds of Welsh coal per horse power per hour, and had hopes of even bettering this. These predictions were based upon the calculations of the accumulated economies to be had from the various steps included in the scheme. The boilers are fitted with Ellis & Eaves' system of induced draught, and also with Serve tubes, which have the effect of increasing the heating surface without increasing the size of the boiler. On the trials steam was easily maintained at 255 pounds pressure, whilst the engines were running steadily at about eighty revolutions per minute, with the induced draught fan running at as easy a speed as 180 to 200 revolutions per minute. Combined with the induced draught system there is also an arrangement of tubular superheater for drying and slightly superheating the steam on its way to the engines. The steam is further kept in a dryer state than usual throughout its progress through the engines by an exceptionally complete system of steam jacketing, and the feed water is returned to the boilers at a much higher temperature than ordinarily, viz., at about 400 degrees Fahr., by a system of feed heaters. But, of course, the most interesting feature is the arrangement of the engines on five cranks, there being two low pressure cylinders, and the cranks being set at equal angles around the crank path. This gives so even a balance of forces,

pounds of coal per horse per hour; on the second run, 1.078 pounds; on the third run, .999 pounds; and on the fourth, 1.069 pounds. The average of these is 1.07 pounds of coal per horse per hour, which will be recognized by all interested in the question of fuel economy at sea as a very remarkable result, and if it can be maintained in regular sea service, there can be no doubt that the machinery of the *Inchmona* will mark the beginning of a new and important step in advance in marine machinery."

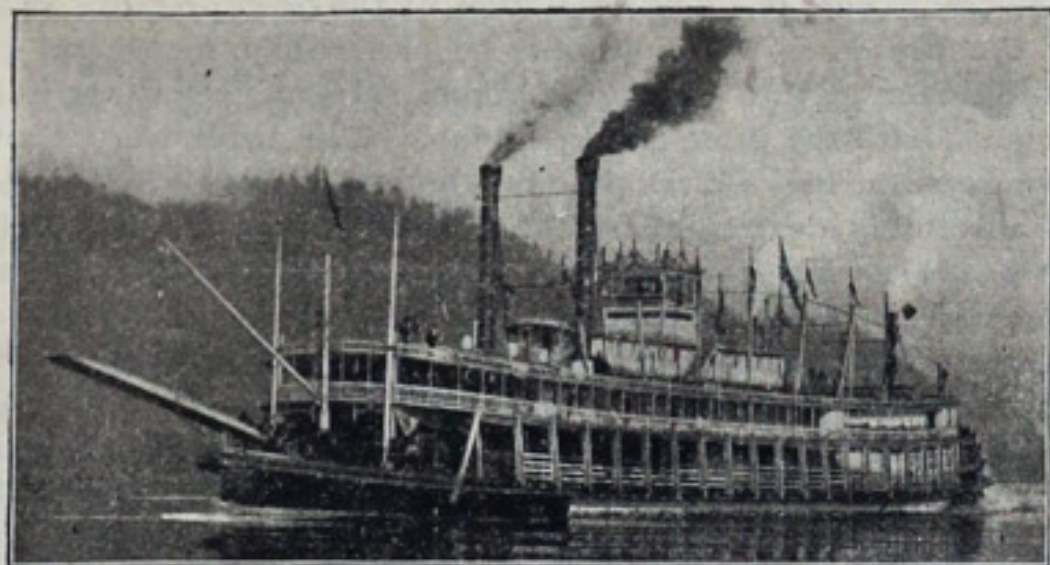
Whatever may be said of the present depressed condition of the iron industry, it is certain that in no department of the trade is there any great amount of material involved in unfilled contracts. Everybody seems to be keeping close to immediate wants, buyers in all cases aiming to use up all material on hand before committing themselves to future contracts. This is even true of the ore business, in which, under ordinary circumstances, sales for the coming year would all be closed up several weeks ago. It would seem, therefore, that when a buying movement is resumed in the market generally the ore business should be specially benefitted by it.

Low rate, short limit tickets between Cleveland and Lorain have been placed on sale via the Nickel Plate road at \$1.00 for the round trip. 77-7-31

One dollar round trip excursion tickets between Cleveland and Lorain are on sale by agents of the Nickel Plate road. 78 July 31

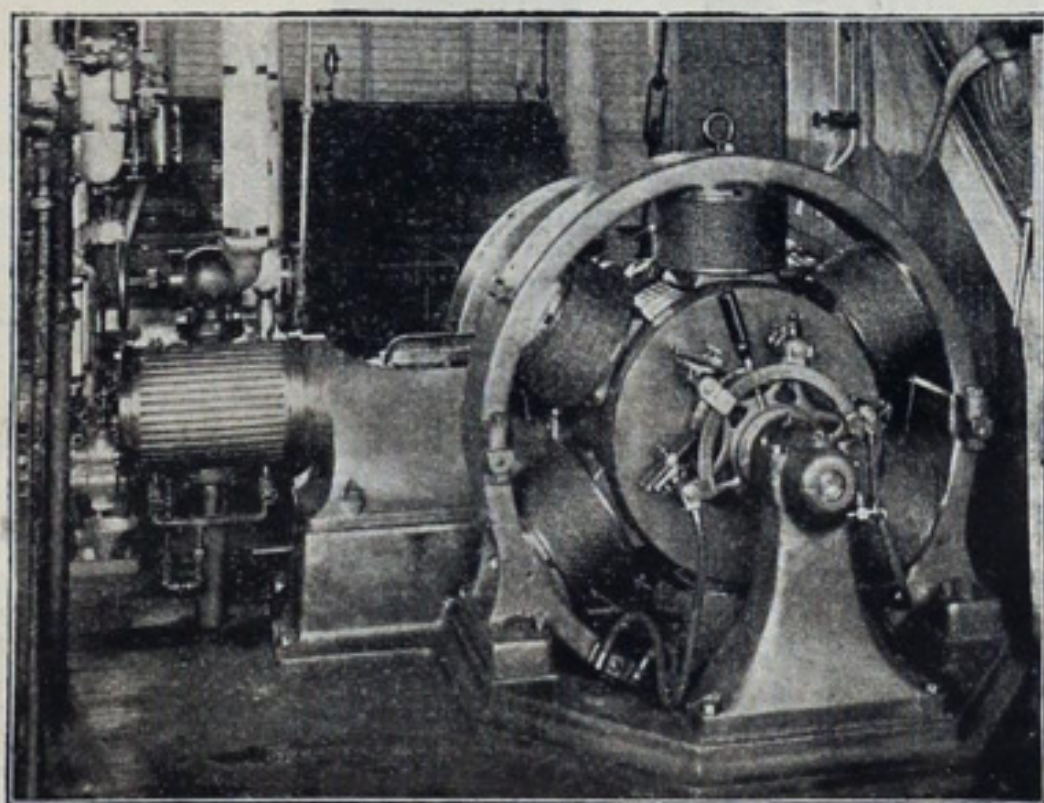
A Costly River Steamer.

Builders of passenger steamers on the Ohio and Mississippi rivers seem to keep up with the best lake and coast builders as regards provisions for the comfort of passengers. The Virginia, a recent addition to the fleet of steamers plying on the Ohio is illustrated herewith. This steamer was launched in November last by the Cincinnati Marine Rail-



way Co. She is now engaged regularly between Cincinnati and Pittsburgh and is one of the handsomest and most perfectly equipped boats on the river. The Virginia is of the flat-bottomed, stern wheel type, 235 feet long, 40 feet beam and 7 feet depth of hold in the clear. The cabin is full length and is 190 feet long, with fifty state rooms opening upon it. The texas is 100 feet long. The decorations of the cabin are in Lincrusta Walton, the color plan being blue, white and gold. The machinery consists of a double set of tandem compound condensing engines, with high pressure cylinders of 15 inches diameter and low pressure of 33 1/4 inches diameter and 34 inches stroke. Steam at 186 pounds is supplied by one battery of four externally fired steel boilers, 42 inches in diameter and 20 feet long.

The steamer is lighted by electricity throughout, the General Electric Co. furnishing the entire equipment. The generator is a 25-kilowatt multipolar machine directly connected to a 40-horse-power automatic engine. The plant is set up on the lower deck, in the main engine



rooms, and furnishes current for 250 incandescent lamps, two arc lamps and one search light. In the main cabin 100 incandescent lamps are used, one in each stateroom, and one hundred more are in the texas and elsewhere. The search light is one of the regular General Electric 12-inch projectors, fixed to the crane mast forward and controlled from the pilot house. The switchboard is of the skeleton type and carries a voltmeter and ammeter, rheostat and switches controlling seven circuits. Each switch and junction box, located at different points in the vessel, is of the General Electric marine water tight type and everything has been done to make the installation perfect.

Trade Notes.

The Carbon Steel Co., Pittsburg, recently shipped a quantity of deck plate to San Francisco for the battleship Oregon. As it was ordered that changes in deck plating already in the vessel be made at the earliest possible moment, the plate was sent to Chicago by fast freight and thence to San Francisco by express.

Steel trusses for a new building 50 feet wide and 60 feet long, to be erected by the Holyoke Gas Co. of Holyoke, Mass., will be furnished by the Berlin Iron Bridge Co. of East Berlin, Conn. Roof trusses are to be entirely of steel and the covering is to be slate. No woodwork or inflammable material will be used anywhere in the construction.

Thos. Drein & Son, Wilmington, Del., have in hand orders for four

22-foot metallic life boats from the Globe Iron Works Company, Cleveland, and six boats and outfit of cork rings for steamers in Duluth and West Superior. Among the many orders from the coast secured by this firm was the outfit for the pilot boat building at Newport News. This service is very exacting.

The REVIEW has received from Clapp & Co., bankers and commission merchants, New York, their third annual "Souvenir Book" covering the business of leading American exchanges in 1895. Letters sent out by this firm deal with facts that either directly or indirectly affect prices. They are issued weekly. The book is a reproduction of the weekly letters of 1895 and with them are given forty illustrations of prominent commercial and government buildings, each of which is accompanied by a condensed history of the business done by the exchange of the department of government occupying the building shown in the picture. Hardly any question can be asked by any person in regard to bonds, stocks, grain, provisions, cotton, wool, coffee, gold, silver or other United States products that is not statistically answered in the book, and the tables are so well arranged that in very small space they generally tell the whole story for ten or twenty years past.

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store in regular elevators at the principal points of accumulation on the lakes on June 13, 1896:

	Wheat, bushels.	Corn, bushels.
Chicago.....	13,871,000	5,577,000
Duluth.....	8,413,000	5,000
Milwaukee.....	543,000	2,000
Detroit.....	121,000	18,000
Toledo.....	257,000	69,000
Buffalo.....	929,000	247,000
Total.....	24,094,000	5,918,000

As compared with a week ago, the above figures show at the several points named a decrease of 562,000 bushels of wheat and an increase of 599,000 bushels of corn.

Babbitt Patent Improved Anchor.

The following letter in regard to the Babbitt improved stockless anchors, of which the American Ship Windlass Co., Providence, R. I., are the sole manufacturers, shows the superiority of these anchors over other styles:

Mr. Clinton Sproat, Dear Sir: Will you ship me as soon as possible one of your 20-pound Babbitt anchors? I have a 30-pounder which held me in an exposed place at Sakonnet through the gales of three years ago but it is rather heavy for every-day use. It has the most hold for its weight and is the most convenient of anything I have seen. Ship by freight care of W. B. Burrington, Barrington, R. I.

Yours truly,

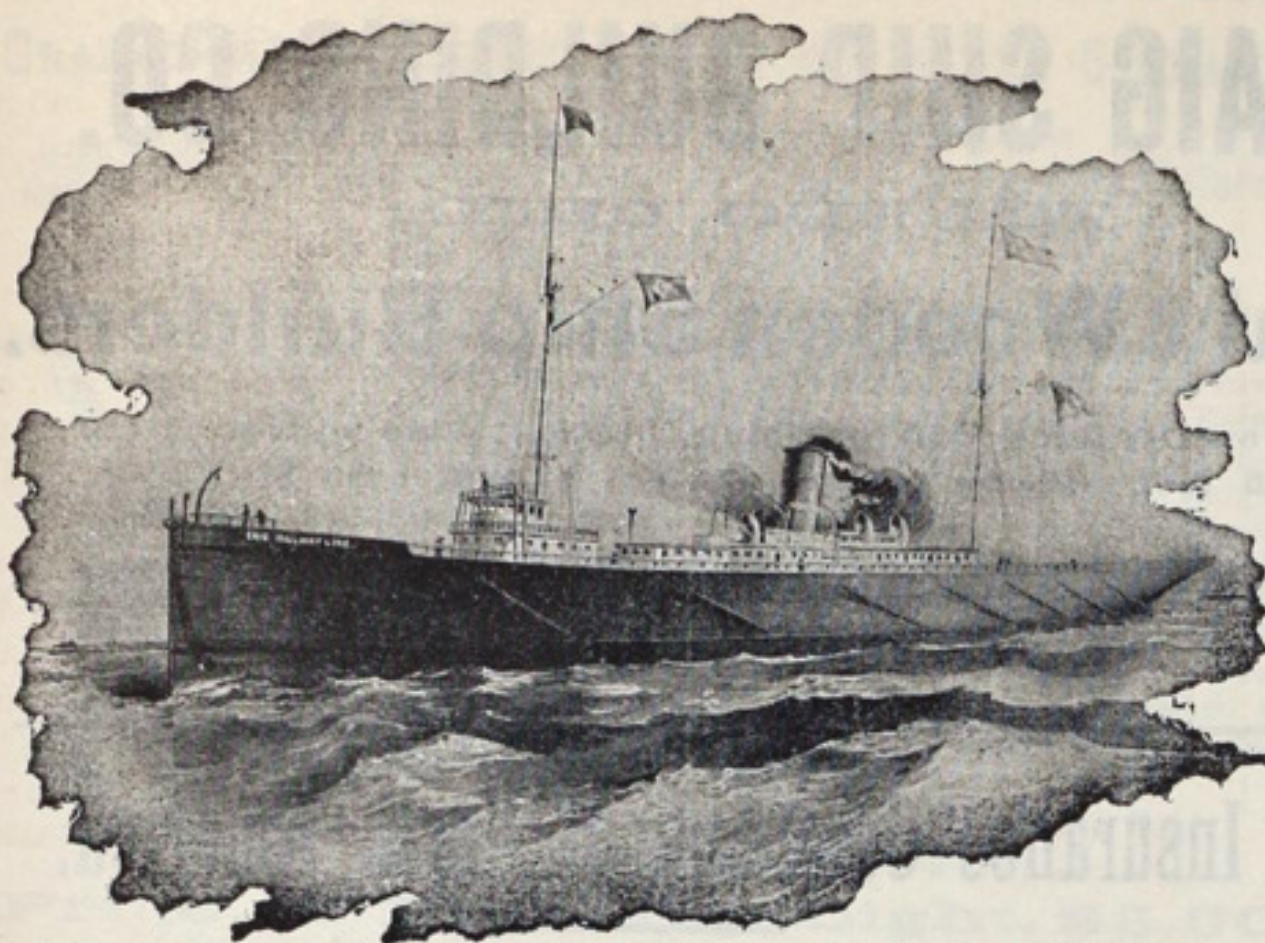
Providence, R. I., June 5, 1896.

S. R. BURLEIGH.

Photographers' excursion to Chautauqua lake—On account of the annual convention of Photographers' Association of America, to be held at Celeron, N. Y., on Chautauqua lake, June 20th to 30th, the Nickel Plate road will sell excursion tickets at one fare for the round trip. 105 19

Rates to Chicago lower than via other lines are offered by agents of the Nickel Plate road, July 3d, 4th, 5th and 6th, returning until July 12th, account the national democratic convention. 129 July 3

TREASURY DEPARTMENT, Office of General Superintendent, United States Life-Saving Service, Washington, D. C., May 28, 1896. Sealed proposals will be received at this office until 2 o'clock p. m. of Wednesday, the 24th day of June, 1896, for furnishing supplies required for use of the Life-Saving Service for the fiscal year ending June 30, 1897; the supplies to be delivered at such points in New York City, Grand Haven, Mich., and San Francisco, Cal., as may be required, and in the quantities named in the specifications. The supplies needed consist of Beds and Bedding; Blocks and Sheaves; Cordage; Crockery; Furniture; Hardware; Lamps, Lanterns, etc.; Lumber; Medicines, etc.; Paints, Oils, etc.; Ship Chandlery; Stoves, etc.; Tools and Miscellaneous articles; all of which are enumerated in the specifications attached to the form of bid, etc., which may be obtained upon application to this office, or to the Inspector of Life-Saving Stations, 24 State street, New York City; Superintendent Eleventh Life-Saving District, Grand Haven, Mich., and Superintendent Twelfth Life-Saving District, New Appraisers' Stores, San Francisco, Cal. Envelopes containing proposals should be addressed to the "General Superintendent U. S. Life-Saving Service, Washington, D. C." and marked on the outside "Proposal for Annual Supplies." The right is reserved to reject any or all bids, and to waive defects, if deemed for the interests of the Government, S. I. KIMBALL, General Superintendent.



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BEST STEAM COAL.

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OUR STOCK CONSISTS OF

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Day and Night within Cleveland
Harbor.

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construction on Sault River.

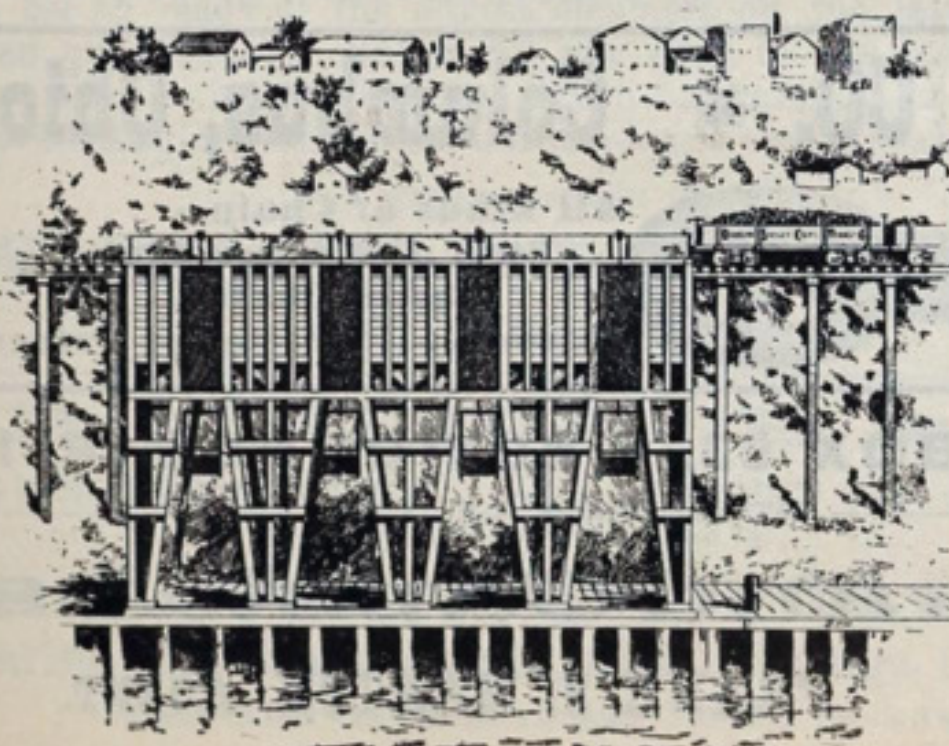
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Main Offices: Perry-Payne Building, Cleveland, O. Telephone No. 8.

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No delay as
Elevated
Pockets
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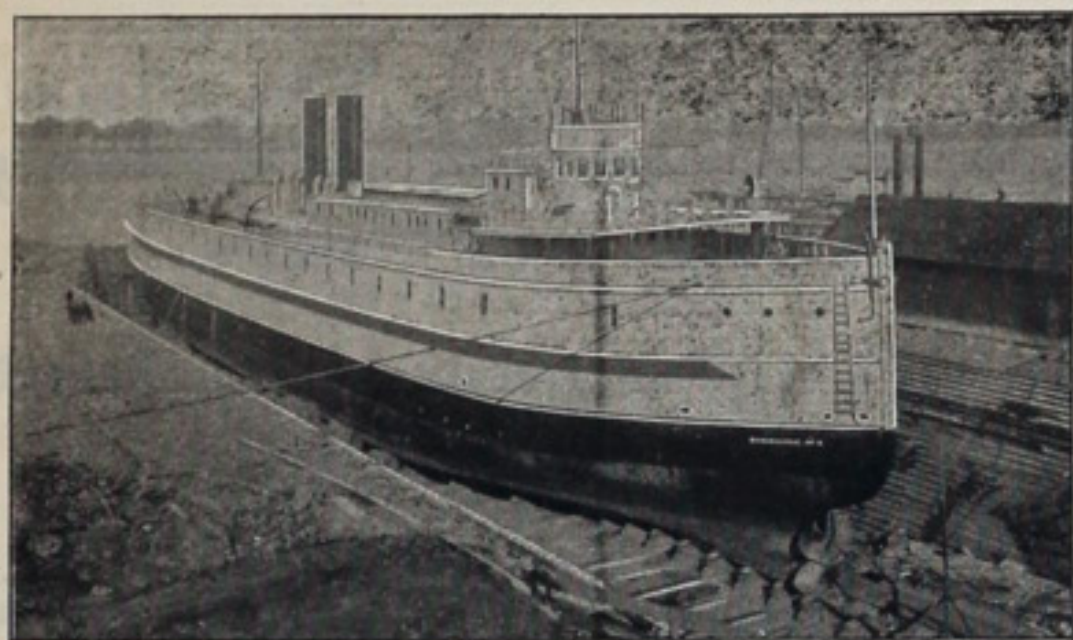
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A great labor saver.
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1 lb. tin boxes, 45 cents; 5 lb. pails, \$1.50.

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Shenango No. 2, 300 feet long, 54 feet beam.

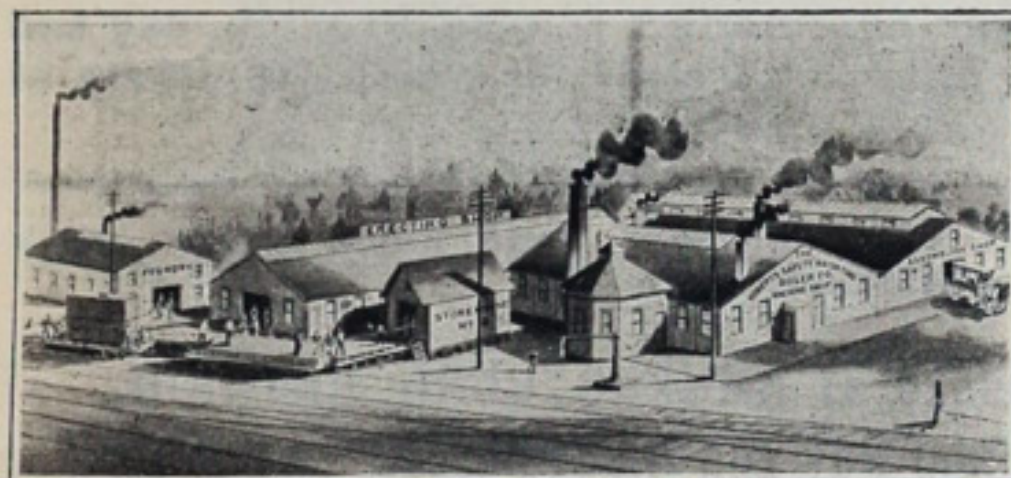
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Metal & Wooden Ship Builders.

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55 feet wide on bottom, 16 feet of Water on Sill.

**Repairs to Metal and Wooden Ships
A Specialty.**



Chicago, Jan. 13,
1896.

THE ROBERTS
BOILER CO.

Gentlemen: I cannot see but that the boiler in the "Mamie C" is just as good as it ever was, even if it is 17 years old. I had no complaint from it last summer.

Yours truly,
A. E. CLARK.

THE ROBERTS BOILER is the Cheapest, Best and Lasts Longest
Adapted for use in Yachts, Launches, and Vessels of all Kinds.

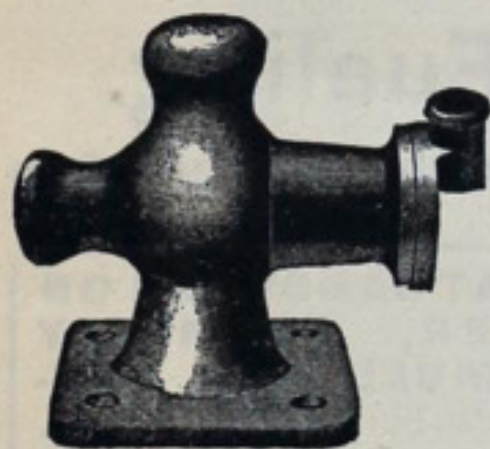
Handsome Illustrated Circular sent free on application to

The Roberts Safety Water Tube Boiler Co.,
WORKS, RED BANK, N. J. 39 & 41 Cortlandt St., NEW YORK.

OFFICE OF THE LIGHT-HOUSE ENGINEER, Ninth District, Detroit, Mich., June 15, 1896. Sealed proposals will be received at this office until 3 o'clock p. m. of Tuesday, June 30, 1896, for the construction and erection of a double keeper's dwelling and a fog signal house for North Manitou light-station, Mich. Plans, specifications, and other information may be obtained on application to this office. The right is reserved to reject any or all bids and to waive any defects. M. B. ADAMS, Major of Engineers, U. S. A., Light-House Engineer.

June 18-25

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Patented in the United States,
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Takes the place of wooden or iron bitts and forms a Combination Bitt and Winch. Takes up less room than the ordinary bitt. Can be used to great advantage as a Windlass or Sheet Holder on Yachts. An examination will convince you of the many uses to which it can be put.

Carried in stock by Ship Chandlers
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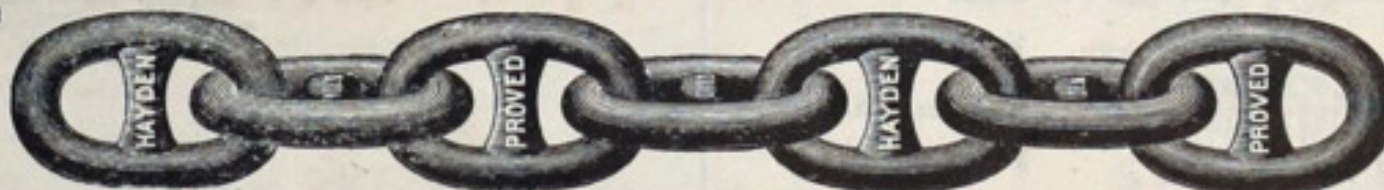
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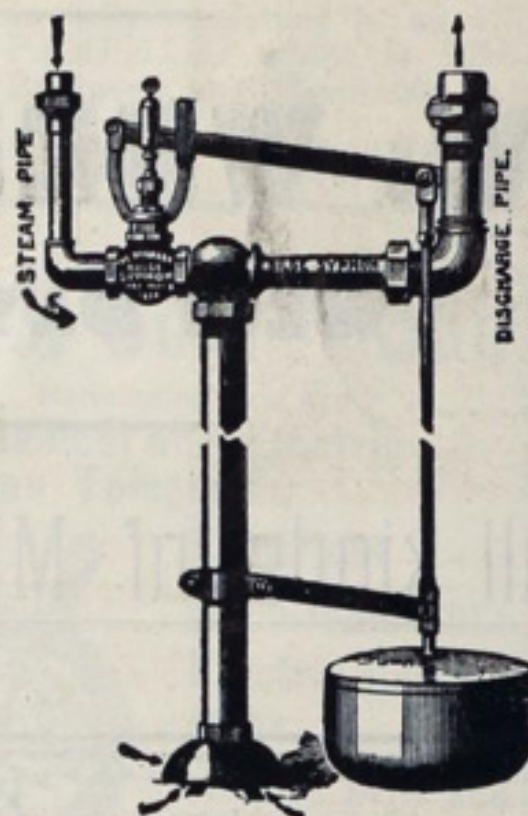


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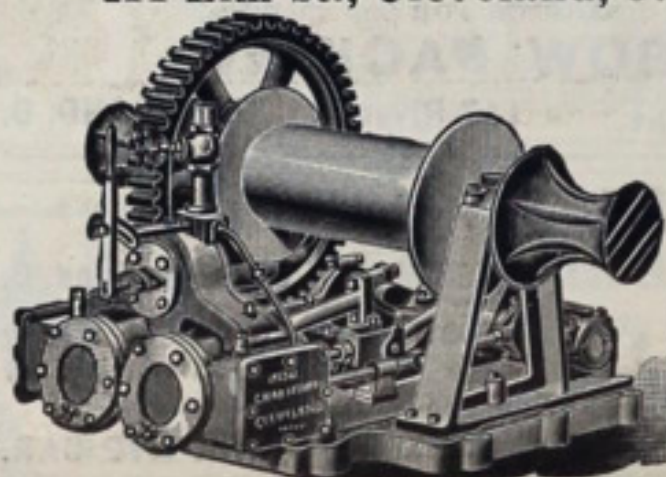
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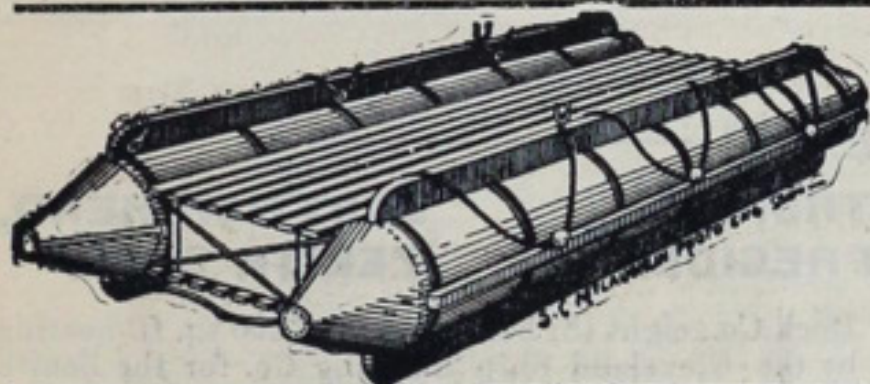
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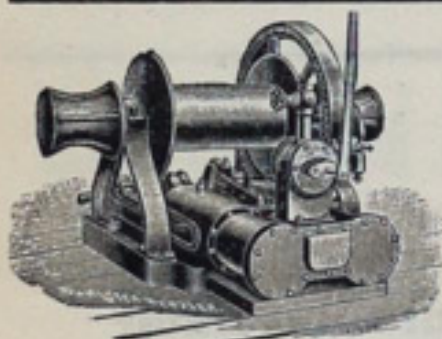
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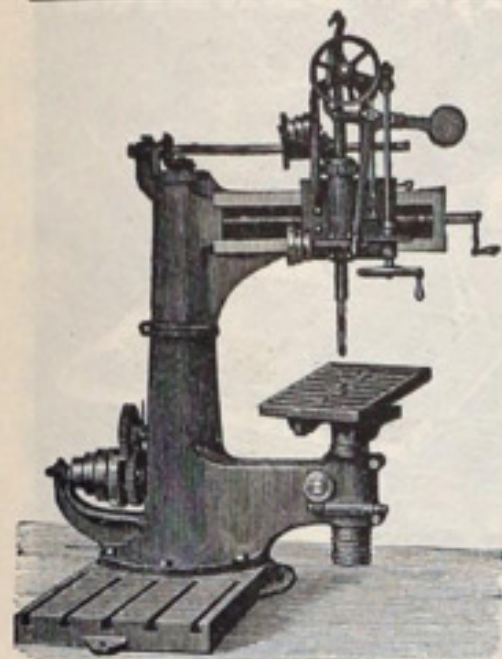
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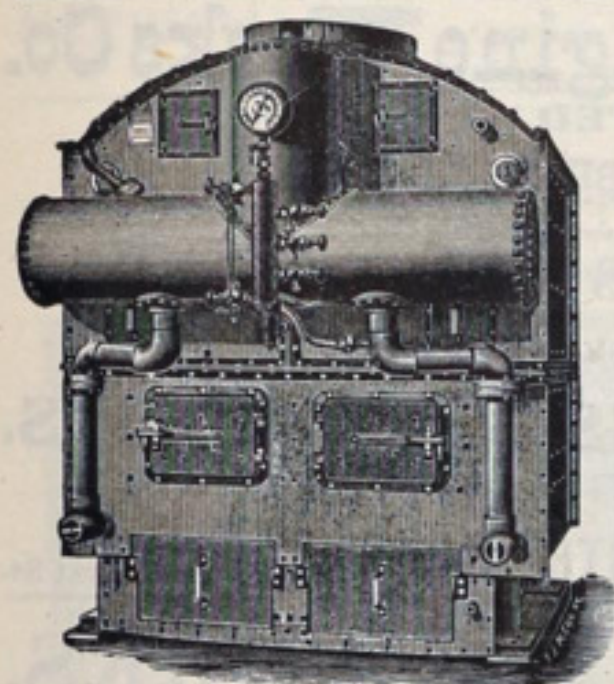
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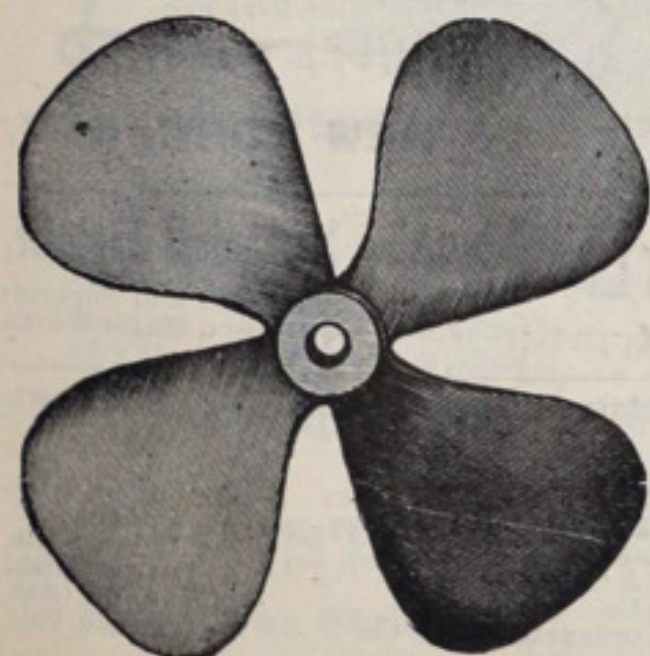
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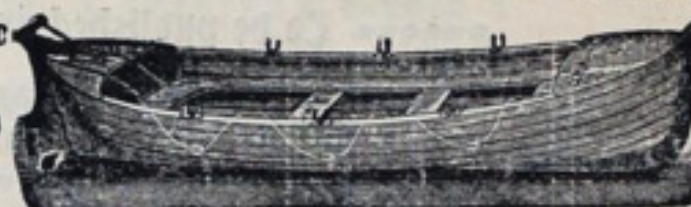
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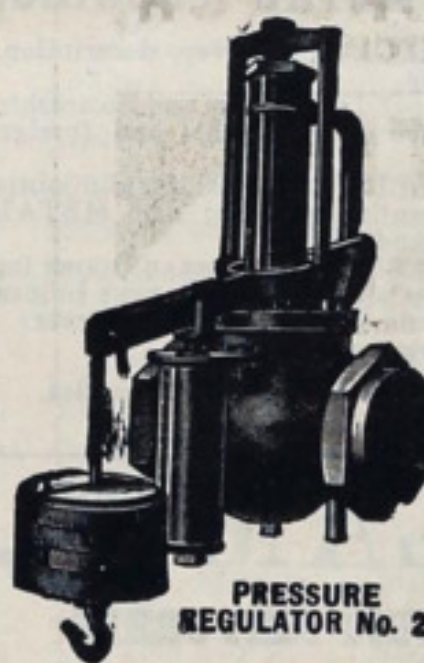
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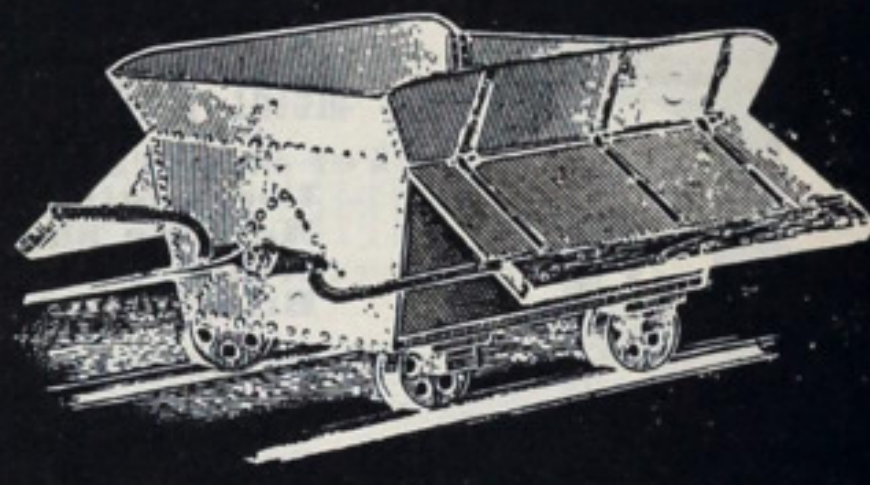
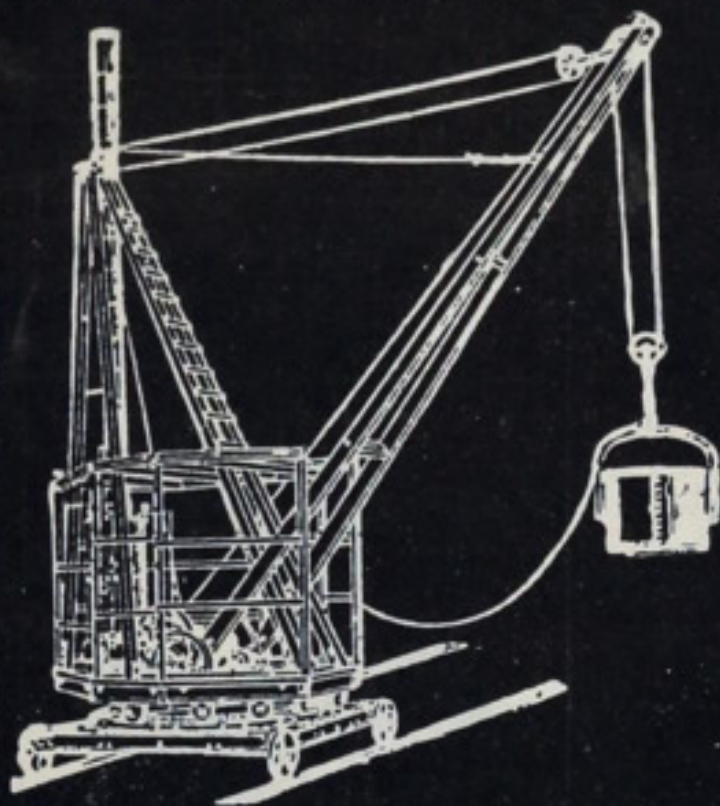
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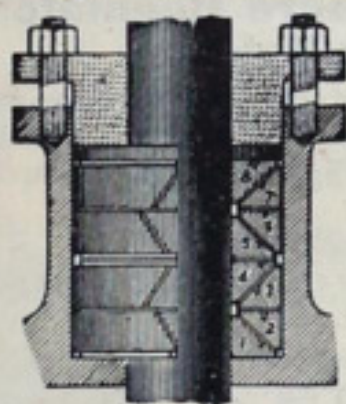
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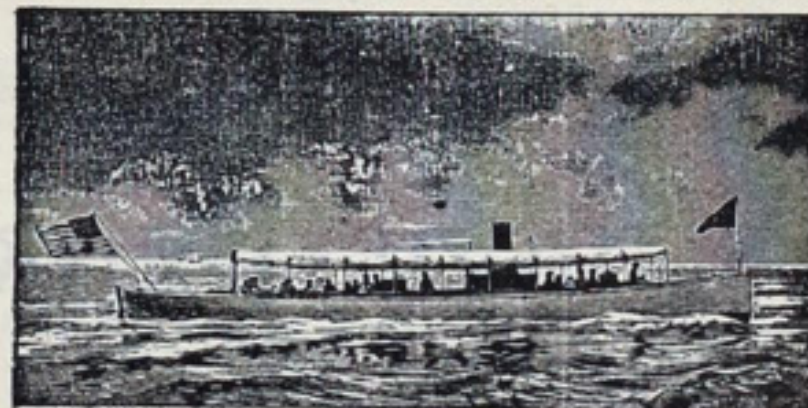
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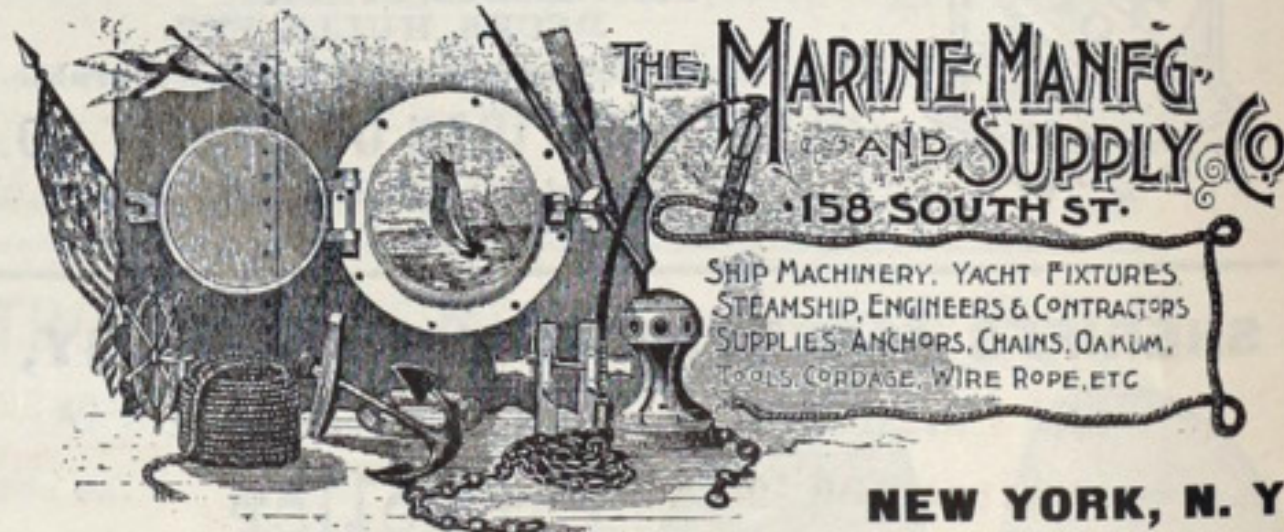
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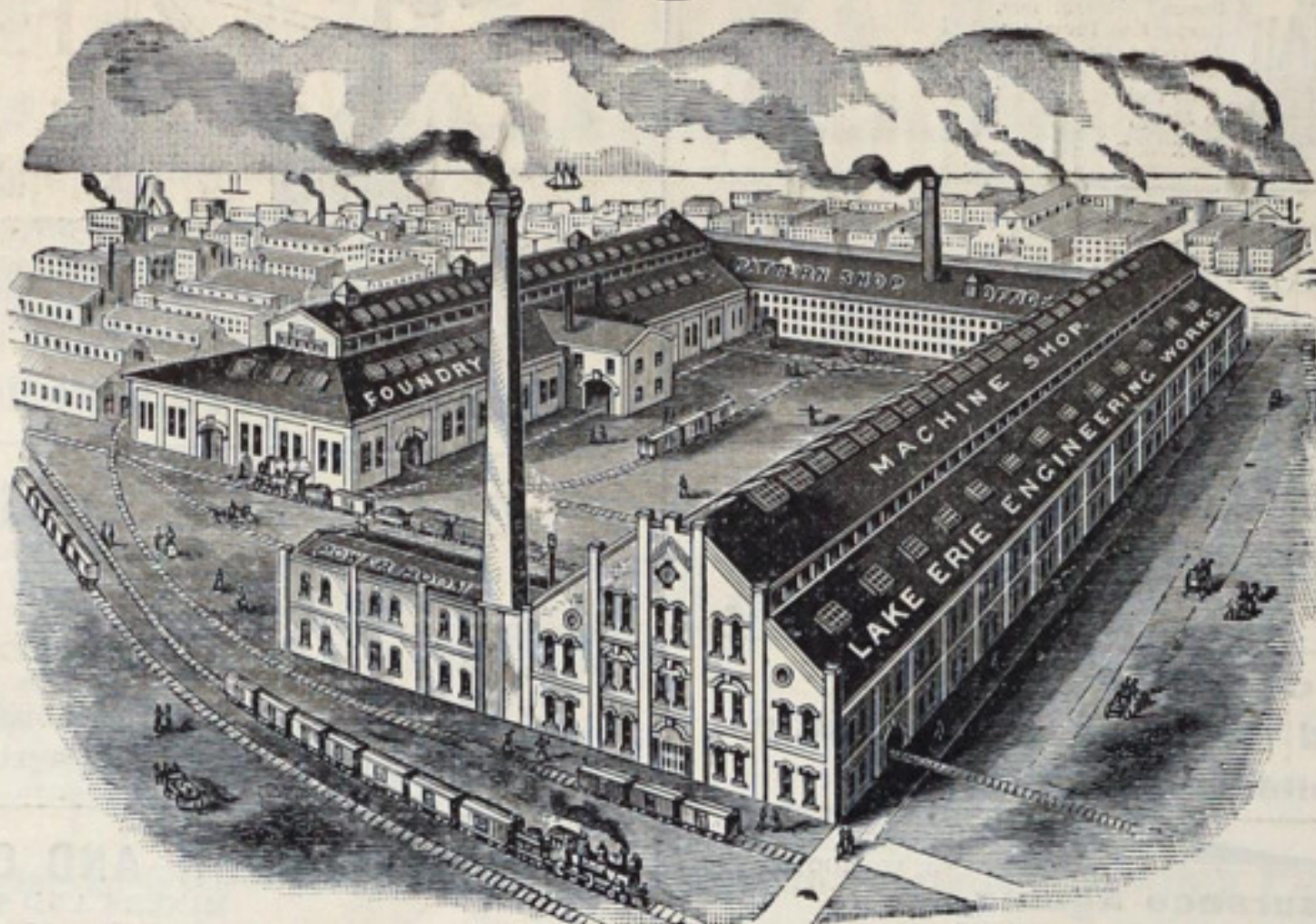
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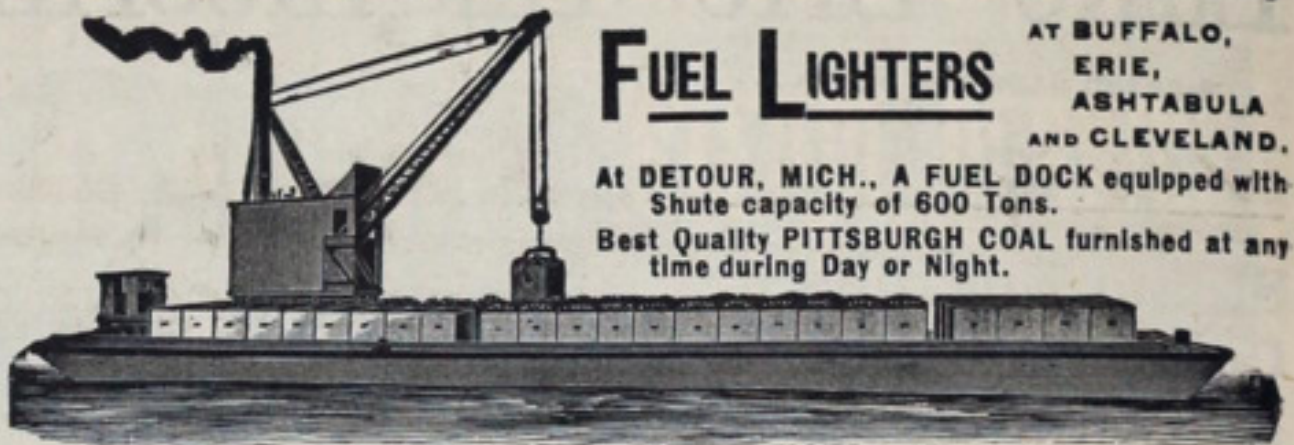
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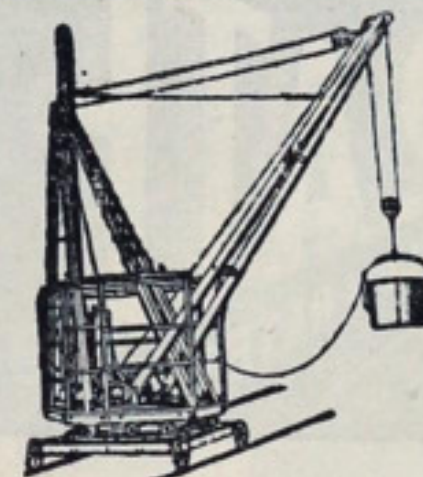
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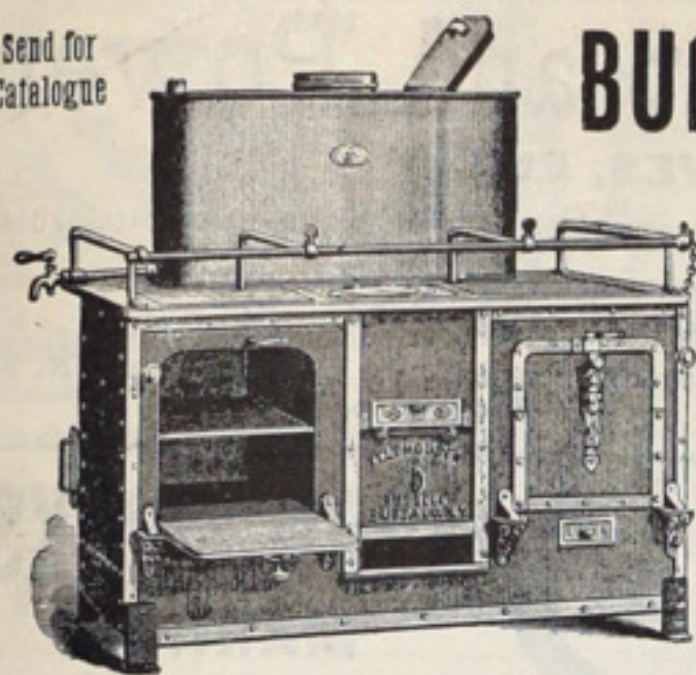
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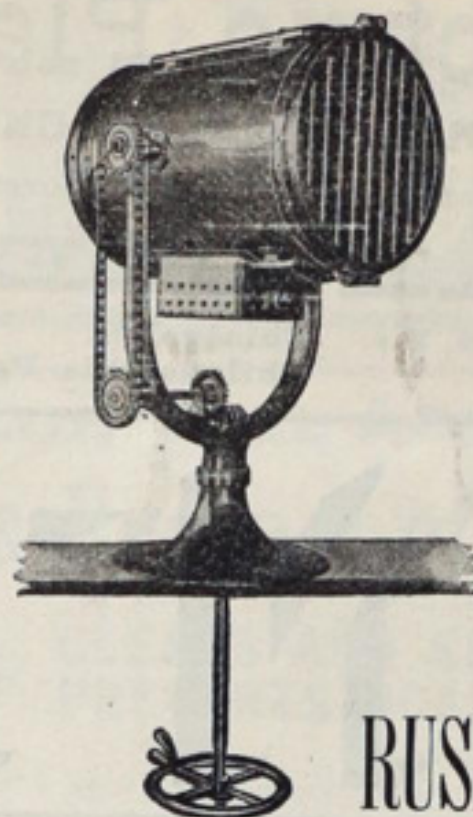
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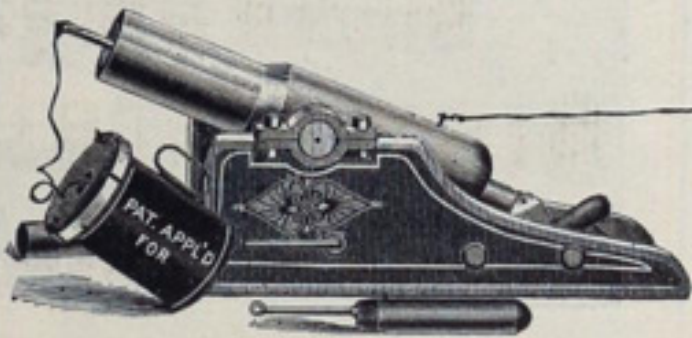
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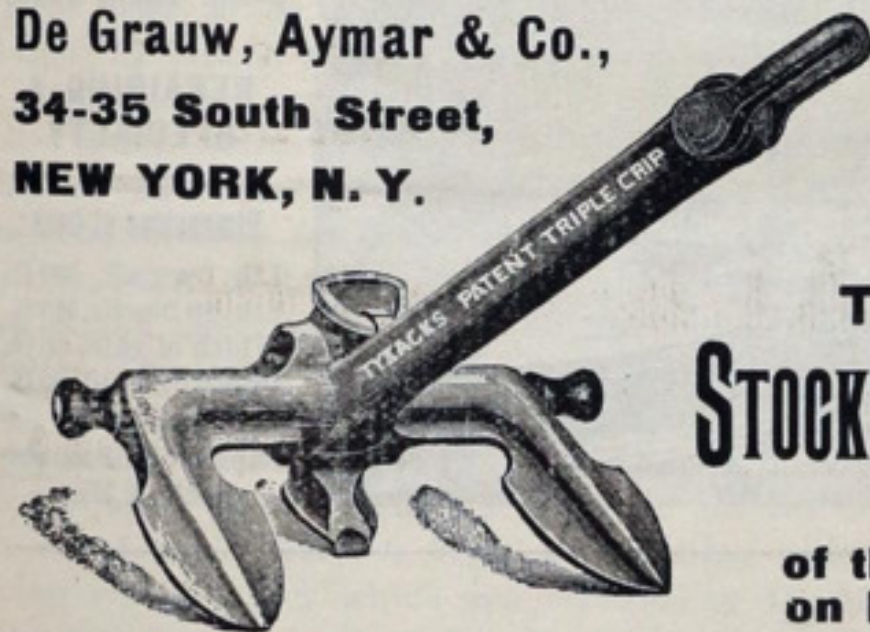
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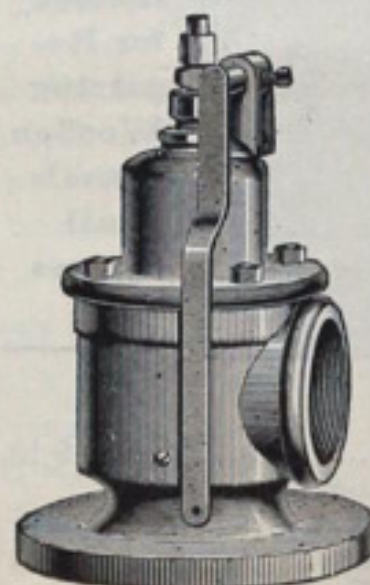
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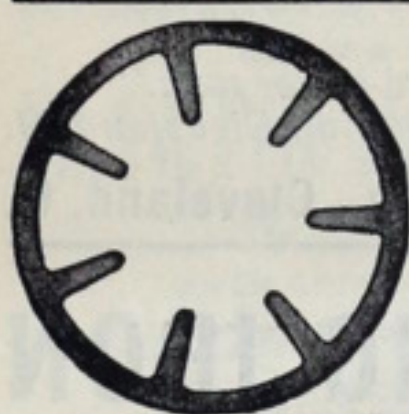
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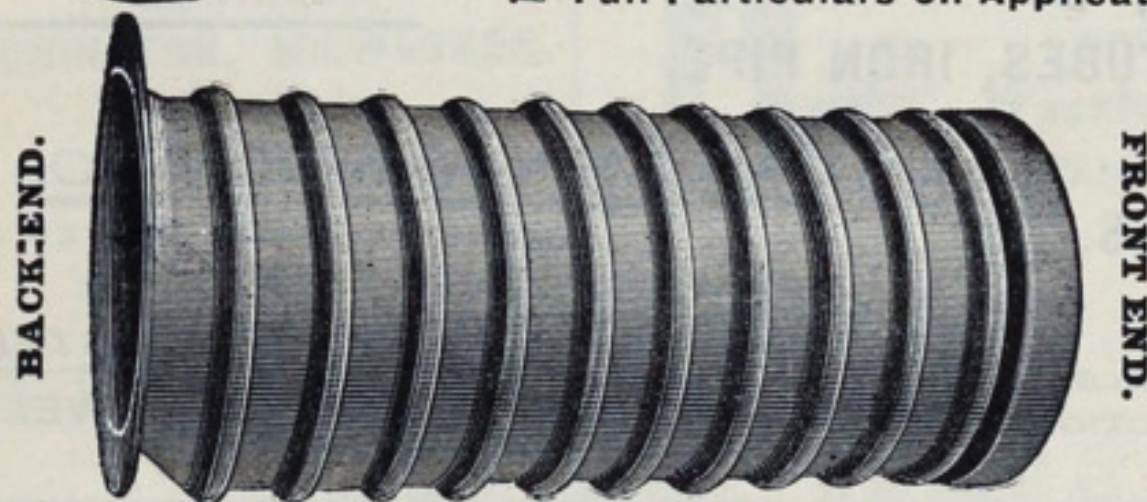
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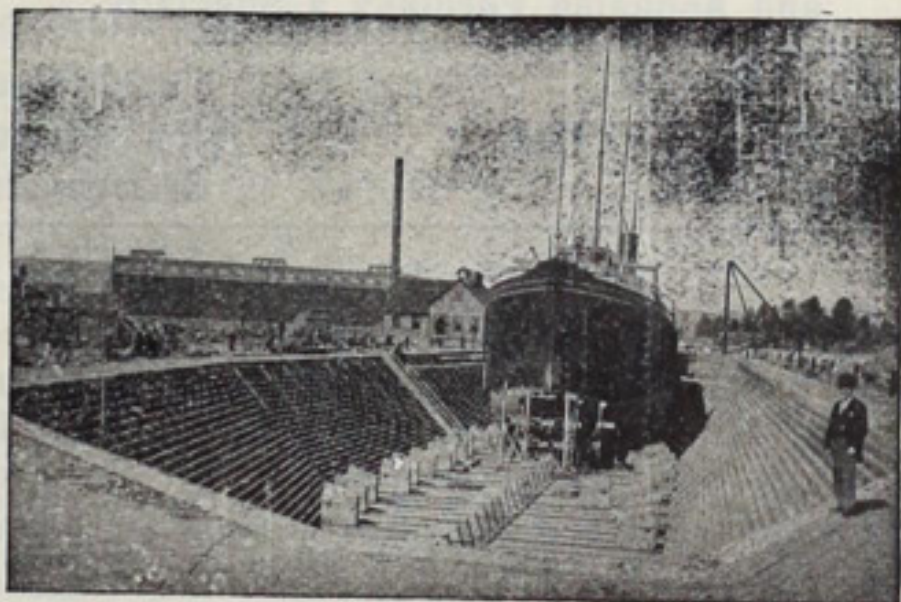
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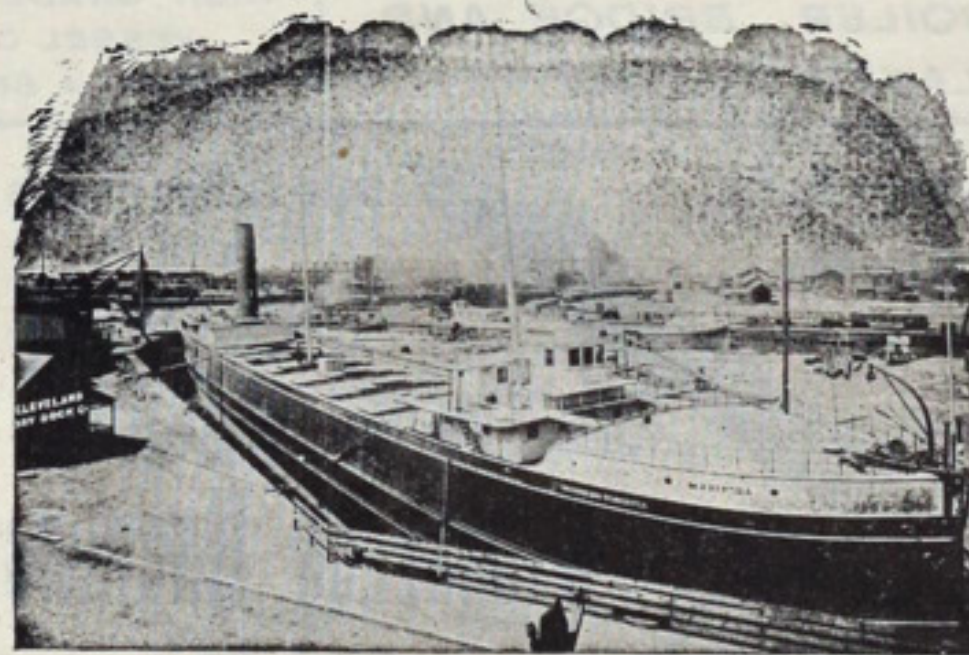
148 Elm St.,
Cleveland, O.

Telephone 1616.
Resid. Phone 4080.

REPAIRING A
SPECIALTY.

Dimensions of Dock:
Lth. over all, 360 ft.
Lth. on blocks, 340 ft.
Width of gate, 50 ft.
Depth over sill, 20 ft.

Capt. W. W. BROWN
Sec'y & Mgr.



Cleveland City Forge & Iron Co.

CLEVELAND, O.

Iron and Steel Forgings



ALKALI WATER PURIFIER!

A Pure Chemical for the safe Removal and Prevention of Scale in Steam Boilers. In use by many of the larger Steamship lines on the great Lakes. Guaranteed

MANUFACTURED BY

THE J. H. PARSONS CHEMICAL CO.,
1509 Masonic Temple, CHICAGO, ILL.